

BOOT WINDOWS IN 4 SECONDS! I-RAM REVIEWED

MAXIMUM POWER COMPUTING

atomic

Issue 59 | December 2005

Proudly Australian | \$7.95

**MMM... SEX ON
A STICK!**

GB DDR & DDR2 memory roundup

**16 GADGET
GOODIES!**

Christmas gifts for you and your PC

BENCHMARKED!

**RADEON'S
REVENGE**

Is this the world's fastest card for gaming?

WINDOWS YOUR WAY

How to setup the ultimate Windows XP system



**ASUS
N7800GT**
Dual-GPU 7800
card... OMG!



**GAMES
GALORE**
Black & White 2, CiV 4,
Quake 4 and more!

SAUD7.95 inc. GST SNZ8.95 inc. GST

ISSN 1444-8998

59

haymarket

9 771444 899000



pure quiet

pure perfection

Antec's all new P180



www.altech.com.au



6th fastest
growing company
in Australia 2004

Australian Distributor

Sydney

Rydalmere Business Park
Unit R, 10-16 South St
Rydalmere, NSW 2116
Ph 02 8831 9999
Fax 02 8831 9988
sales-syd@altech.com.au

Melbourne

Building 3
13-15 Brough St
Springvale, VIC 3171
Ph 03 9558 5090
Fax 03 9558 5091
sales-mel@altech.com.au

Brisbane

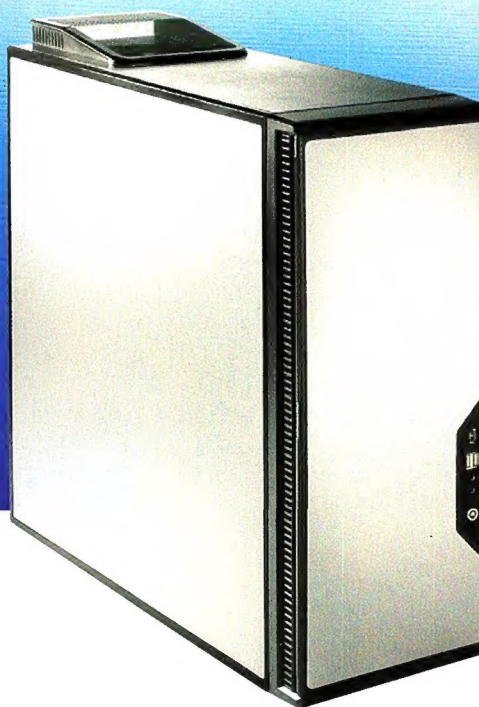
64 Hope St
South Brisbane
QLD 4101
Ph 07 3017 2000
Fax 07 3017 2020
sales-bne@altech.com.au

Perth

Unit 2
8 Carbon Crt
Osborne Park, WA 6017
Ph 08 9242 8822
Fax 08 9245 7383
sales-wa@altech.com.au

Contact us for details on how to become an Antec premium reseller in your state.

pure performance



WITHOUT COMPROMISE

Antec
The Power of You

NSW Umart International
A-Plus Solutions

02 9745 0877
02 9746 0288

www.umart.net
www.aplus.net.au

QLD Game Dude

07 3387 1500

www.gamedude.com.au

VIC Scorpion Technology
PC Case Gear

1300 726 770
03 9584 7266

www.scorpnet.com.au
www.pccasegear.com

WA Austin Computers
Nintek
PLE

08 9201 2788
-
08 9309 4771

www.austin.net.au
www.nintek.com.au
www.ple.com.au

SA Leader Computer Systems

08 8112 6006

www.leadersystems.com.au

TAS Tasmanian Principal Computers

03 6234 5677

www.tasmanianpc.com.au



New Visual Studio 2005.
The difference is obvious.



Spot the difference? Once you start coding, you'll see it immediately. The new Visual Studio® 2005 has over 400 new features, such as Web and Windows® controls, that reduce tedious tasks and repetition. So you can focus on creating great code. Find out more at microsoft.com.au/vs

Microsoft® 
Visual Studio 2005

Atomic Live

Christmas is coming! It's a fantastic time of the year. It's when Santa comes and brings games to all the little gamers asleep on their keyboards. And not just any old games, but the best. It's like the combined creativity of the world's entertainment industry pours its sweetest succour over us at this time of the year, and we slip and slide among the honeyed-deluge like kittens playing in a huge saucer of milk. Make that *chocolate milk*.



This month alone we've got Black & White 2, Civilisation 4, Quake 4, X3: The Reunion, and Far Cry: Instincts. Not to mention F.E.A.R. is retail as I write this, and Oblivion is set to hit next month. But these are just the wafer thin mints to a diet of hot gear we have for you in this issue.

ATI has finally let loose the X1000 (formerly known as R520) and we snapped up the range of new cards based around this promising tech. No really, it's damn hot, like see-through bikini hot. While CrossFire came to the party late and forgot to bring drinks, the X1000 has turned up with a slab, *for everybody*. Which is great, because competition keeps the dream alive.

We also rounded up a ton of 1GB paired memory modules. 26,624 megs of RAM, to be exact. It was like playing with gold bullion. Some of them even *looked* like gold.

We have a few new sections this month, too. Take a look at *Matchbox* – at *Atomic*, we like to think we know how to build the fastest of the fast PCs. It's in our blood. And it's also in yours. So we've built our ultimate beast box, and we're asking you to *beat* it. It's like Iron Chef without the bizarre foodstuffs – who's machine will reign supreme? Be in it!

Finally, *Atomic Live* is about to hit on *December 8*. It's become so big it has, true to its name, taken on a life all its own. For the first time ever you can get up close and personal with everyone we deal with in the industry, hardware and games, not to mention the *Atomic* crew. So if you've registered, I'll see you there!

Ashton Mills

amills@atomicmpc.com.au

Gigabyte i-RAM

Non-volatile storage so fast it'll make your ears bleed.



042

Stubbs the Zombie

Best in brainy gaming.



103

Matchbox

Think you can beat our custom-built rig?



111

Civilization 4

Discover the ultimate in strategy gaming from the man Meier.



096

GREEN CODE URL

www.atomicmpc.com.au/greenclub/awmh7yjk4f

COVER STORY ▼

056



Return of the RADEON

We take you through the architecture, the cards and the benchmarks of ATI's next-gen tech.

DirectX 10

Microsoft's gift to the 3D gaming world.



020

Gearbox

Keyboards, headphones and addictive gum!



030

RAM-tastic!

A round-up of the latest high-performance DDR and DDR2 that you simply need to see!



036

LOGIN

Information, just the way you need it. Delectably digestible.

Update	008
Futureproof	012
Z-Access	014
Chat	016
X-Ray	020

HARDCORE

Atomic does hardware like nobody else. Hot damn, that's sexy.

Tech Trends	026
Ground Zero	028
Gearbox	030
Framerate	035
Head to head	036
Kitlog	052

Hardware reviews

ASUS N7800GT DUAL	041
Gigabyte i-RAM	042
ASUS P5N32-SLI Deluxe	045
Gigabyte GN-MD01	045
Leadtek 7800GTX TDH Extreme	046
Seagate NL35 400G	046
Microsoft Laser 6000	048
D-Link DGL-4300	048
MGE Magnum 500W	050
Dell 5100P projector	050

TECHNIQUE

Hands-on tech, the way you like it.

Windows	064
Linux	068
Hardware	072

GAMEPLAY

Games are good. You know it, and we know it. Enjoy them here!

Scanner	080
Talking Head	082
Culture Shock	084
Pipeline	087
Engine Room: Dark Messiah	090
Game reviews	
Black & White 2	094
Civilization 4	096
Quake 4	099
Far Cry	101
Stubbs the Zombie	103
Soul Calibur 3	104

INTERACTIVE

Atomic is more than a mag, it's your mag. Join in with us here.

I/O	106
Hotbox of the Month	108
Team Atomic	110
Matchbox	111
Competitions	112
Websight	113
Fallout	114

update

Tech news you can't live without. Seriously, it's that awesome.



Australian Game Developers Conference 2005

Games? Development? How can it not be exciting, thinks **Logan Booker**.

Most are aware that Australia has a thriving community of game developers including Irrational Games, Pandemic Studios and Micro Forte. Not surprisingly, it's one that's large enough now to support its own conference so local programmers, designers and students can come together and talk about computer entertainment.

Enter the Australian Game Developers Conference, founded by the Academy of Interactive Entertainment. It's the event to end all events about games and developing them in Australia.

This year's AGDC, to be held from December 1 to 3 at Melbourne's Federation Square, will showcase some great talent

from here and overseas. Along with Blizzard's Chris Metzen and BioWare's Ray Muzyka, giving talks on everything from story and plot creation to the future of gaming, there will be Chris Donahue from Microsoft chatting about gaming in Vista and Sony's George Bain on getting stuff happening on the company's Playstation 3 console.

Of course, *Atomic* will be covering AGDC 2005 in all it's developed glory. From the presentations to the keynotes to the unsigned games, only *Atomic* will have the full report.

Now into its sixth year, AGDC has proven itself as a great place to not only discover more about games development, but also a platform in which to launch a career in the industry.

So, if you think you have a demo CD that is sure to impress then it might be a good idea to get down to Melbourne and start handing it out to everyone.

And if you don't, there's plenty to see in the AGDC expo and much fun to be had at the evening parties and dinners.

Tango up

There's a style guide in Linux' future, reports **Logan Booker**.

Inconsistency in desktop styles may have scared many away from taking up Linux, the free, open source operating system we enthusiasts have grown to love since its creation by Linus Torvalds in 1991. What *really* scared them away was their ugliness – although beautiful in functionality, your standard Linux distro is hardly a work of art. Hence, we have desktops like GNOME and KDE.

Unfortunately, the novice is unable to transition smoothly from one desktop to another due to a lack of design standards, and having to remember a different set of icons for

each desktop has kept Linux equivalents of the Windows GUI as poor seconds.

Steven Garrity and Jakub Steiner have set out to change this with an initiative called 'Tango'. Tango is all about giving designers of free desktops a consistent set of standards for not only icons, but colours, naming conventions and general desktop styling. Garrity is currently the lead for Mozilla's Visual Identity Team while Steiner worked previously for Ximian, involved with the GNOME desktop.

According to Garrity's blog, 'We've been working on it for a few months now, just



getting the basics figured out before we started bragging.'

'The Tango Project is a collaborative effort of a variety of free/open source software designers and artists to work towards unifying the visual style of the free (mostly Linux) desktop.'

For more information, check out the official Tango website: tango-project.org.

#006 File sharing

From files to freedom, file sharing in its many forms has played a major role in the development of both society and the super stupendous online world.

Napster

The year of hoard file-sharing. Users could download music from a centralised server as well as their fellow users. It opened the doors to everyone who wanted a piece of the file sharing world, including the RIAA. Napster had to close its doors prematurely thanks in part to the RIAA, leaving its creator Shaun Fanning to face the music... as it were.



1978

BBS

File sharing has its roots in BBS or the Bulletin Board System. Users with their smoking fast 1200Kb/s modems would dial into a BBS and converse with other lucky modem owners. It was a great way to share files, and eventually lead to today's newsgroups.

1985

FTP

No matter the operating system, the File Transfer Protocol was there. Different levels of access meant greater flexibility when it came to content. FTP is still prevalent today and is a part of the TCP/IP protocol stack. Many favour it over modern chunk-based P2P tools.

1999



Norton not happy

Microsoft is moving in on Symantec's territory.
Is a battle brewing, wonders **Logan Booker?**

Rumours were confirmed when Microsoft acquired security vendor GeCAD's anti-virus technology back in June 2003 that it was working on a security solution independent of Windows. The beginning of this year saw the release of the beta version of OneCare, the culmination of the software vendors work and now it has announced Windows Client Protection, an enterprise-level package that will contain anti-spyware, anti-virus and various other tools to maintain system health.

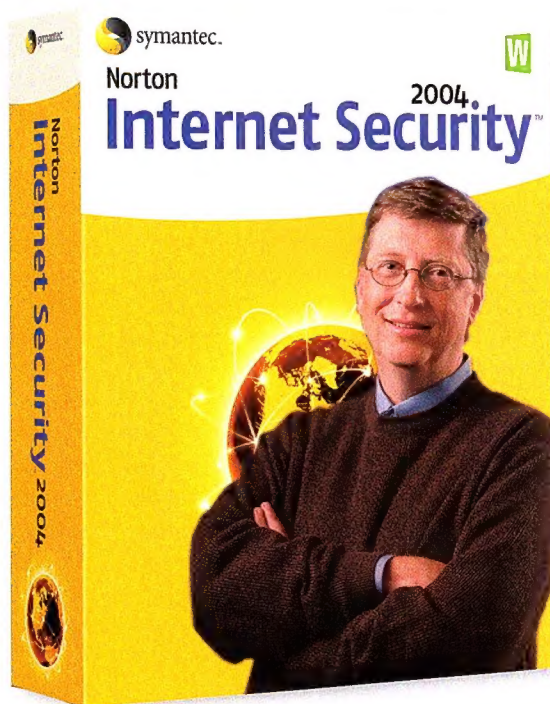
This puts Microsoft right in the path of security industry heavyweights McAfee and TrendMicro. However, it is Symantec, which specialises in more than just anti-virus, that Microsoft seems to be competing with. The software included in the OneCare and Client Protection packages are similar in functionality to Norton SystemWorks and Internet Security, providing tools that not only protect the user from viruses, worms and trojans, but also improve system performance by cleaning caches and tweaking memory and display settings.

'Windows OneCare is being designed to address core safety concerns such as worms, viruses and spyware, but also to span broader PC health issues: helping protect electronic assets such as digital photos, music, financial data and software; and guarding against performance degradation and system clutter that can result from heavy use,' explains a press release on OneCare released back in May this year. It goes on to say that the key features of the software will include backup

functionality to CD and DVD and 'performance and reliability tools'.

The development of an independent security package was to be expected considering the amount of work Microsoft has done to shore up Windows XP by including a competent firewall in Service Pack 2, as well as the release of Windows AntiSpyware beta back in January this year.

Microsoft has the advantage over the likes of Symantec in that it can package the software with its operating system. As long as it can be uninstalled Microsoft won't have a problem. If not, it should prepare for a legal response from Symantec (or other), similar to the one from Real Networks when Microsoft prevented the removal of Windows Media Player.



In the future, Microsoft owns everything.

short circuits

Keeping closed betas locked away

is harder than ever and not even a heavyweight like Microsoft is safe. The latest build of the company's Windows Vista operating system has leaked a number of days before its official release in October. The new beta features a new version of the Internet Explorer 7 browser and Windows Media Player, and should be available (officially) to MSDN subscribers by the time you read this.

Staying with Microsoft, the company has released a statement warning users of a fake Service Pack 3 update for Windows XP that is currently doing the rounds online. Apparently while the SP did originate from Microsoft, the fixes it contains are not general patches and are designed for a specific machine configuration. Anyone who believes the pack is an update is 'grossly misled', according to Microsoft.

Google Reader, an RSS news reader, is the next free web-based service coming out of the Internet juggernaut. If you feel that your current RSS reader isn't up to scratch then visit labs.google.com and give this one a try.

Dutch authorities recently proved that running a 100,000 zombie PC ring is not only uncool, but also extremely illegal. A group of three teenagers were arrested for manning the denial-of-service/mass-mailing operation, said to be one of the biggest ever. However, while the ringleaders have been caught, there are still 100,000 PCs to rid of the group's hijacking software.

Hey, zombies need office jobs too.



Kazaa/Gnutella

With Napster gone, there was room for other file sharing programs and protocols. Enter FastTrack and a billion and one clients for the mostly decentralised network, the most popular being Kazaa. The Nullsoft-developed Gnutella also made an appearance at this point, boasting a truly decentralised network where no one could take the blame.

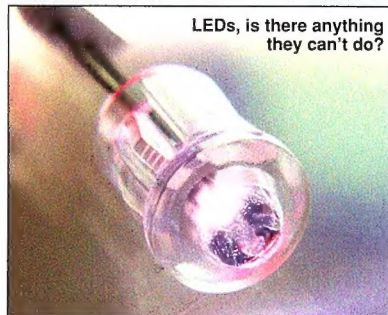
2000

2005

BitTorrent

Although created by Bram Cohen back in 2002, BitTorrent is by far today's most widely-used file sharing application on the Internet, accounting for almost 35 percent of all web traffic and 50 percent of all P2P traffic. Unless the RIAA manages to shut 'it' down somehow, BitTorrent looks set to remain the top player for years to come.

short circuits



Using quantum dots, a student at Vanderbilt University may have come up with a likely replacement for the trusty Edison light bulb – accidentally. Our future light sources could possibly use super-bright LEDs thanks to this discovery. Considering LEDs last longer, produce no heat and are more efficient, this ‘accident’ can only mean good things.

Microsoft has made a beta version of Monad, its advanced command shell for Windows Vista, available for download. Originally to be included in the Vista betas, Monad was removed due to issues relating to security. If you'd like to give it a whirl, you can grab it from here: tinyurl.com/c529a. You'll need Windows XP SP2 and v2.0 beta 2 of the .NET framework.

According to a review by hardware site www.gamepc.com, Intel's latest dual-core 'Paxville' Xeon can't match AMD's top dual-core Opteron for speed or power usage. '...[Intel's] new dual-core chips ... simply are bested across the board by AMD's dual-core Opteron ... Even worse, the Opterons typically perform much better while running at slower clock speeds and only having half the amount of on-die L2 cache.' Ouch.

By the time you read this, Apple's iTunes service should be available here in Australia, allowing users to buy music for their iPods (and other MP3 players) from a massive range of labels and artists. Bigwigs from Apple in the US will be flying over for the launch, and will include iTunes' VP Eddie Cue.



What's happening?

We're bringing it to the kids.

Discounts, prizes, people and games. That's one way of summing up what will be the biggest tech event in the history of histories. This event of course is Atomic Live 2005, and if you haven't already registered for this screamingly deluxe one-day escapade then you should do so, right now, at www.atomicmpc.com.au/atomiclive.

Want to know a little more before you inevitably sign up? No problem. Atomic Live 2005 will cater to every geek need. As soon as you walk through the front gate you'll be in the centre of technology heaven. The event exhibition hall will be teeming with vendors like ASUS, Seagate, Microsoft, Take2 and more. You'll be free to approach real people from these companies and ask them questions about their products, enter competitions to win software and hardware and get your hands on discounted gear. Don't tell us that isn't rocking.

Once you've perused the expo, you're then free to move into the gaming area. Now this place will be teaming with awesome games thanks to the very awesome Take2 and Xbox. Want to be one of the first people to play an Xbox 360 multiplayer? Then you'll need to be at

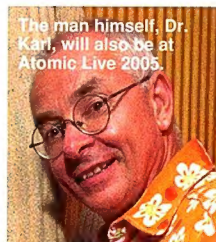
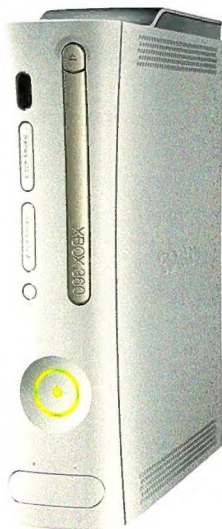
Atomic Live 2005 because you simply will not be able to do it anywhere else. If you just want to hang back and spend some time on original Xboxes, you can sit down and blast away on one of the 24 Xboxes we'll have for you to relax and game on

Not much for consoles? Then right next do to the Xbox room is the PC gaming room where you can take part in a 16-player deathmatch and win some terrific gear. You'll have to register to be a part of it so make sure you head over to www.atomicmpc.com/atomiclive and reserve yourself a spot before they're all gone.

Microsoft will also be launching its latest Visual Studio software, which includes Visual Studio Express and Web Express. These products offer those with an interest in programming a chance to use Microsoft's flagship development software without having to buy thousands of dollars of software. We're running a special Create a Game competition in conjunction with this launch, so if you think you have the skills then venture to www.atomicmpc.com.au/forums.asp?s=2&c=10&t=3181 for all the details!

This is just a sample of what's to come. Make sure you don't get left out of the greatest thing since the iron-powered car.

Atomic Live 2005 – it's where you need to be on December 8.



AMD Athlon™ 64 x2 Dual Core Processor PC

so smart and powerful you can do more in less time



**Only
\$3699**



free

Canon



**Canon Pixma MP130
Multifunction Printer**

free

pqi



**1 GB
PQI Memory Stick**

free



**100 pcs
Ritek 8x Blank-DVD
A grade**

- high performance
- most popular
- the best choice for Designer and Gamer

AMD Athlon™ 64x2 Dual Core Processor 3800+

Dual-core technology is like having two processors, and two working together is better and faster than one working alone.

Increase your performance by up to 80% with the AMD Athlon™ 64 X2 dual core processor. Work or play with multiple programs without any stalling or waiting. AMD Athlon 64 X2 Dual-Core Processors provide the same level of system features you have grown to expect with the AMD Athlon 64 processor family.

The AMD64 core provides leading-edge 32-bit performance and support for future 64-bit applications. The Industry's first true on-die dual core x86 PC processor

Specification

Main Board Abit KN8-Ultra

Supports AMD Socket 939 Athlon 64/64FX and Athlon 64 x 2 dual core processor. 2GHz system bus using Hyper Transport™ Technology, Supports AMD CPU Cool 'n' Quiet Technology.

HDD 200GB SATA-300 - WD

Performance that beats all competing 8 MB-cache drives. Add to that SATA II 300 MB/s transfer rates and these drives push the boundaries of performance for their class.

Ram 2GB DDR400 Corsair

(TWINX2048-3200C2) 2GB (2x XMS1GB) PC-3200 Dual Channel 2x64Mx64nnon-ECC, 184-pin DIMMs, Unbuffered, CL2,

Leadtek PX6600GT 128MB

Direct9.0c Shader Model 3.0 support SLI Multi-GPU Ready PCI-E-SIG certified Leadtek Ultra Cooling System Full-version Game Bundle(Prince of Persia & Splinter Cell) Video-editing software bundle (WinDVD 5.0, WinFox II, Muvee)

16x +/- DVD-RW Pioneer

This new model supports 8x Dual/Double Layer and 16x write speeds on both DVD-R/+R media. This extends Pioneer's track record of establishing key performance benchmarks when introducing new DVD writers.

Antec



ATX Case Sonata II Antec

Specially designed low-noise SmartPower 2.0 450W ATX12V v2.01 power supply Front mounted USB, IEEE 1394 (FireWire,i.Link) - 3 x 5.25" external drive bays- 2 x 3.5" external drive bays - 4 x 3.5" internal drive bays in individual trays

Samsung



19" LCD Samsung 930BF 4ms

The 930BF has the fastest response time of 4 milliseconds. With superior image quality, games and streaming video can be viewed more vividly and with more clarity.

Logitech



Keyboard & Mouse Logitech MX3100

3100 is a high-performance keyboard and mouse combination that redefines expectations. It's the only cordless desktop that includes the award-winning MX, 1000 Laser Cordless Mouse, the world's first laser mouse and an advanced cordless keyboard.

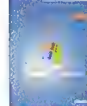
Logitech



2.1 Stereo Logitech X230

Enjoy clean, crisp, consistent sound from your games, music, and more. high-tech subwoofer adjusts itself dynamically to deliver distortion-free bass. And the two wall-mountable satellite speakers use Logitech's patented FDD2 technology to eliminate the uneven sound response

Microsoft



Operating System WinXP Pro X64

Top 5 technical benefits of Windows XP Professional x64: Large memory support, Compatibility, Increased reliability and security Familiar environment, Partner commitment

www.itestate.com.au

visit our website to get more informations



shop online!

5/213 North Rocks Road North Rocks NSW 2151

02 9630 9630



short circuits

The VTT Technical Research Centre in Finland has invented 'gaitcode', a special technology that can be embedded in mobile phones to detect that gait of the owner and use it as security device. If the phone detects the wrong gait, it will lock itself down. We have to ask though what happens if you sprain your ankle?

Think 80 million is a big number?

Try 16 trillion. The latter number is the highest island density per square inch for magnetic media ever achieved and it was accomplished recently by a group of French scientists. The former is the current density of today's magnetic media. This amazing feat was made possible by almost 0 Kelvin temperatures and work is ongoing to get the same densities at room temperature.

In an effort to bring wireless standards together, a group of influential companies have banded together to form the Enhance Wireless Consortium. The first order of business for the group, which includes the likes of Intel, Lenovo and Cisco, will be to develop the reportedly speedy 802.11n standard.

TOP 5 ...rejected graphics technologies

- 5 **Quadcunx**
Why have just four cunx when you can have five?
- 4 **Hardware P&O**
Apparently noone ever needed their cruise ships hardware accelerated.
- 3 **Bum-mapping**
Bitboys added a 'p' and all of a sudden it was a success.
- 2 **Z fluffer**
Turns out Z buffers are always ready for action.
- 1 **Zoomorphic filtering**
What's there to say? You just can't filter a good texture with an elephant.

future

Quenching your thirst for the latest technology and hardware



Power pads

Want to recharge your MP3 player and mobile phone on a plate? It's possible today, reports **Logan Booker**.

One of the last steps toward a completely wire-free world is disconnecting our mobile devices from their electrical shackles. Although no one short of Nikola Tesla has devised a way of transferring energy without cables, a small company called Splashpower has invented a plate called the SplashPad that's capable of recharging all manner of portable contraptions simply via contact.

Obviously, the plate needs to be connected to a normal wall outlet to work but, once powered, the SplashPad generates an electrical field that can charge a special coil inside the mobile device. The battery is then replenished by this charge. Electromagnetic induction is used to create the electrical field.

Discovered in 1831 by Michael Faraday, electromagnetic induction has since become a pivotal technology for many applications including welding. The basic principle relies on applying a constantly changing magnetic force to a stationary conductor – the classic setup involves moving a magnet through a coil of wires. The changing differential across the wires causes an electrical current. You can test

the effect for yourself by spinning a blinged-up case fan with your fingers until the LEDs light.

The SplashPad works by making use of the electrical field caused by this effect and running it parallel to the surface of the pad. All that's needed to take advantage of the energy is a receiver coil. This coil can be built into the device, or an adaptor can be used. So you can finally forget about hanging on to multiple power adaptors and plugs.

The larger version of the SplashPad can accommodate as many devices as you can fit onto it, the power requirements regulated by the coil circuitry in each device. Splashpower claims that the recharge times are on par with that of normal wall charging and there are no ill effects to either device or user.

Although people will be able to buy the larger 'two-device' and smaller 'one-device' pads along with adaptors for devices that lack a receiver coil, Splashpower wants to implement the technology transparently in normal surfaces including chairs, dashboards and desks. That way, all you would have to do is place your mobile phone on your bedroom table to get it charging, for example. Splashpower has also said that the SplashPad can power more than just phones, MP3 players and PDAs – it could provide energy to a lamp placed on the same bedroom table.

While currently unavailable, Splashpower has said on its website that the SplashPad will be on shelves by the end of the year.



Making a splash in more ways than one.

atomic

Your potential. Our passion.™
Microsoft

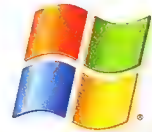
start something **VICTORIOUS**

START LIVING YOUR GAME.
PLANNING YOUR STRATEGIES.
BUILDING ALLIANCES.
EXCHANGING COVERT MESSAGES.
CHASING GLORY ONLINE.

START PLAYING TO WIN.

With a world of software and devices
that run on Windows® XP, the choice is yours.

Go to windows.com.au and start anything you like.



Windows[®] **XP**



Happily ever after

What to do next? **Tim Dean** doesn't ever want to ask himself that question while playing a game ever again.

Once upon a time, there lived a heroic prince in a mythical kingdom. As he sat abreast his mighty white steed, his golden armour shining in the sun's bright light, he considered what to do next.

Well, there was the lost treasure of the Goblin King to find, or the uncharted Badlands to conquer. There was talk that the dark elves were stirring up trouble in the mountains. Then again, battling in the Orc Wars to the east was also an option.

At the end of the day, there were too many choices, and he decided it was all too hard. So he knocked off to the nearest tavern and lived happily ever after.

Not many classic heroic tales finish like that. That's probably because the poor heroes of such tales rarely have the opportunity for such a respite. Usually they are being driven from one perilous adventure to another, herded by the combined forces of fate, the machinations of evil villains or some other pressing concern that threatens them or their loved ones.

This fact forms the core of good storytelling. A hero needs to have a motivation behind their heroic actions. On the surface this motivation is usually as straight forward as compulsion – rarely are they heroes by choice. If you think about it, how many heroes are active, rather than reactive to their environment? Luke Skywalker? Frodo Baggins? Neo?

However, this seems to be a lesson that's lost on some game designers. 'Open ended story line' seems to be one of the big buzz phrases of the last few years in gaming. But why is open ended better than linear?

First and foremost this seems to be based on the assumption that the medium is interactive, and not passive like a book or film. Given the player is a participant and not a spectator, they need to have choices open to them. Otherwise

the game can feel like it's on 'railroads'.

I don't know whether this is entirely true. There's no question that a linear game – one that makes the player feel they can't exercise their volition – is a bad thing. However, this is only a problem if the storytelling hasn't dealt properly with the issue of choice. A player who has perceived choices, but is strongly motivated by the story to pursue one particular path, and is rewarded for that decision, will probably not feel railroaded at all.

For example, if the castle is burning down, the hero will try to get out. If they then run into an ogre carrying away the princess, they'll pursue. If the ogre leads them to a cave where an evil necromancer is raising an army of undead about to attack the kingdom, they'll fight them. And so on. Sure, at any point the hero could have done other things, and there'll be plenty of choices in how to actually execute their decisions, but there's really only one sensible plot path for them to follow.

The difference between a fixed medium and an interactive medium needn't be the choices presented to the hero or linearity of the plot. Even so, an interactive story needs to give the player an illusion of choice – make them feel like they could do different things, but then steer them towards furthering the story for compelling reasons. Side quests can be an entertaining distraction, but the main quest needs to compel them to action in a good way, and reward them for their action (and not punish them for inaction in other activities) to keep a good story rolling.

After all, who wants to live happily ever after?

Everyone wants to live happily ever after Tim!

tim@atomicmpc.com.au



At the end of the day, there were too many choices, and he decided it was all too hard. So he knocked off to the tavern and lived happily ever after.

Explosive Performance, Extreme Realism - Only on NVIDIA.
Win an SLI kit and overhaul your system today!!

"log on to the websites to find out how"



English website: www.hardwarezone.com/microsite/nvidia



Chinese website: www.D-CROSS.com

SLI

Shader Model 3.0

**High Dynamic-Range
(HDR) Lighting**

The Power of 3

WHY SETTLE FOR OUTDATED GRAPHICS TECHNOLOGY FOR YOUR PC?

Don't get stuck with old technology. Make sure your graphics processing unit (GPU) has **The Power of 3:**

Microsoft® DirectX® 9.0 Shader Model 3.0 support: The standard for today's PCs and next-generation consoles enables stunning and complex effects.

High Dynamic-Range (HDR) Lighting support: The ultimate effect for ultra-realistic games.

NVIDIA® SLI™ technology: Delivers the highest possible gaming performance and best image quality.

GET AN NVIDIA® GEFORCE™ 6 OR GEFORCE 7 SERIES GPU WITH THE POWER OF 3 TODAY FROM:



© 2005 NVIDIA Corporation. NVIDIA, the NVIDIA logo, GeForce, and SLI are registered trademarks or trademarks of NVIDIA Corporation in the United States and/or other countries. The NVIDIA demos: Dawn, Dusk, Nalu and Luna images are ©2003, 2004, 2005 respectively by NVIDIA Corporation. All rights reserved. All other trademarks are the property of their respective owners.



nVIDIA.



Con Kolivas

Doctor. PC builder. Kernel hacker. And Australian. Is there anything he can't do? Ashton Mills talks to a local legend.

Not many people know of this man, but his work on the Linux kernel has helped push Linux into the mainstream as a desktop OS. Even so, this is just a hobby for a man whose primary calling is to keep you drugged up when it matters most. *Atomic* talks to the multitasking Con Kolivas.

Atomic Which came first – your passion for building silent PCs, writing code for the Linux kernel, or your trade as an anaesthetist?

CK I started studying medicine in 1988. At the time I was using an Amiga and it was before the days people were regularly building their own PCs. Furthermore, the Linux kernel was only a twinkle in Linus' eyes since it didn't even exist before 1991. To become an anaesthetist you have to be a medical resident (doctor after finishing training) for at least two years and then it is 5 more years minimum advanced specialist training. I started studying Anaesthesia in 1996 and only really started using GNU/Linux hardcore in 1999. As for coding on the kernel that wasn't till about 2002.

Atomic And which is the most rewarding? :

CK That's actually quite an interesting question

because I've never tried to compare them in that way. There is no doubt that when I am dealing with very complicated surgery and anaesthesia, and doing what is considered life-saving management, that is by far the most rewarding. However in terms of rewarding for the day to day stuff in anaesthesia, there are 'highs' I get from Linux / Linux-kernel that are greater than it. I feel extremely fortunate, though, in that I find my (real) work very rewarding all the time.

Atomic So what was it about training to be a doctor that appealed to you?

CK Think of all the corny things possibly good about being a doctor and in all reality that was the appeal to me. Helping people get better, life and death situations, feeling like I'm really making a difference, the intellectual challenge, good career and income, respected and so on.

Atomic How did you end up getting interested in Linux and writing for the Linux kernel?

CK I grew up with C64 and Amiga and for a period was free from computers for about 5 years while studying medicine. After coming back to PCs and finding the Amiga dead

atomicblo

Name **Con Kolivas**

Occupation **Anaesthetist**

Website members.optusnet.com.au/ckolivas

Born and bred in Melbourne, Colin went to Melbourne High School from 1984-1987 and then onto studying medicine at Monash University in Melbourne from 1988-1993. First worked as a resident medical officer followed by Anaesthesia Registrar in various hospitals around the city. Based from Box Hill and St. Vincent's Hospitals till 2000. Started as a full time staff specialist in Anaesthesia in 2000 at Box Hill Hospital and still employed there today. Apart from clinical Anaesthesia Colin is heavily involved in teaching and Continuing Medical Education of Anaesthesia trainees and specialists.

Hobbies include building quiet PCs and hacking on the Linux kernel. As you do.

and nothing interesting out there I moved to Windows in around 97. After two years of bitter disappointment with all fun removed from computing I gave GNU/Linux a shot in 99 and never looked back. I haven't run windows since.

The kernel transition was rather unusual. At around the 2.4.18 days I was following kernel development out of interest and was very excited by the O(1) CPU scheduler, low latency and kernel preemption code. So I started trying to merge the patches and somehow succeeded. The -ck patchset was then born and I maintained it low level for some time.

[Later] I started hanging out in the #kernelnewbies IRC channel and watched 2.5 develop. I watched the desktop development start withering away as we moved to an incredible enterprise kernel. After coming up with a benchmark to try and quantify responsiveness ('contest') I found this helped direct some kernel tuning but we ended up close to 2.6 being released and still had a CPU scheduler that was not flexible enough on the desktop – either the GUI performed great with the X-window-system being heavily tuned for or audio worked extremely well, but never both. Having seen some of the code for the O(1) scheduler while merging patches for 2.4 I had an understanding of why this was so and started looking further at the code since noone was championing it. I started the so called (O)1 interactivity patches to show what the problem was and learnt something about how things really worked. I was hoping that if I showed someone what the problem was and how to go about fixing it they would take the code and work from it. Instead I found Andrew Morton start including my patches in the -mm tree which was recognised as the unstable branch for the kernel. So I just kept going at fixing the problem. It's become quite an addiction.

Atomic So, how did you pick this up so easily? How did you learn to be a programmer?

CK Before answering that question I have to say I still don't consider myself a true kernel hacker and am faking it most of the time... I have had no formal teaching in programming whatsoever. The last coding I did prior to Linux kernel was one of those 3D graphing programs in 6502 assembly on the C64 – 20 years ago. I learnt C by reading 'kernel/sched.c' in the Linux kernel. It just made sense to me and I've been reading programming help guides online since. If you fake something long enough, and people believe you, you can start convincing yourself that you're capable of it.

Atomic Your -ck patchset is widely known among those who are habitual kernel compilers, what drew you to compile patchsets for the kernel?

CK My aim was to champion desktop performance. I just wanted to contribute back to the amazing community that I had become part of. Once it was obvious that I wasn't the only

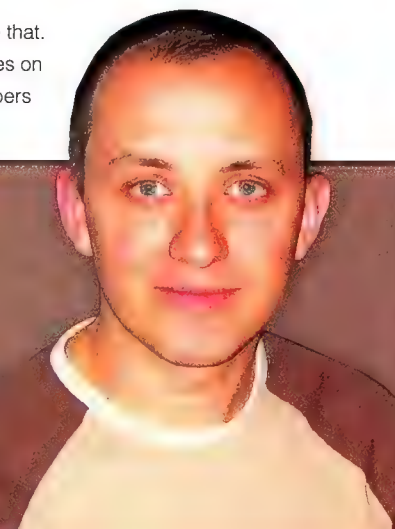
almost always ends up being unique to one distribution, or are poorly scripted up fragile BASH or Perl scripts that break at every turn and need complete rewrites every time the core software changes.

The other major complaint about the distributions is that they all will only work with their own packaging – which is fine if you have a huge repository, but if you want to manually build and install your own applications outside that repository or packaging system the whole thing falls over. The worst offence is splitting up a huge software package (eg kdbase) into many many smaller packages and you never end up installing everything you want. This just makes it fragile to update versions of software since you end up uninstalling 20 packages and installing 30 more.

About the only distribution which delivers on its promise is Slackware. It makes almost zero promises and delivers working full sized packages deviating very little from the original source and never complains. Of course it comes with virtually no configuration tools of

time (3.06 GHz HT), I was still restrained by space constraints that meant that cooling for the CPU was an issue. I was running distributed computing clients at the time (like setiathome) which meant that the CPU was always running at full capacity. This meant that the CPU cooler was always running with the fan flat out due to the combination of maximum heat generation and poor airflow in my constrained space. The first coolers for that P4 at the time simply had closer spaced fins and faster fans. This made them resonate and sound like a chainsaw. Spending 3-4 hours a night on a PC that made that much noise was incredibly traumatic and I suddenly decided it was time for a change. Once you start silencing a box it becomes very addictive while you try and make it truly silent and not just relatively quiet.

Atomic True that. I've got drives on silicon dampers to reduce



I just kept going at fixing the problem. It's become quite an addiction.

one interested in that area I made my patches available and the response was tremendous. The users out there who test my patchset have been very positive and do excellent testing and give extremely useful feedback. That basically drives my continued interest in the area. I want Linux to be excellent on the desktop and the -ck users encourage me to continue.

Atomic Speaking of which, what is your favourite distribution?

CK GNU/Linux distributions really frustrate me. They all follow the same pattern and promise to deliver so much and end up not.

My main beef with them is that they all end up deviating far from the original software packages in an attempt to unify the feel of the distro, and to set up Windows-style 'wizards' to do the configuring for you. It's all good in theory but all that ends up happening is we have every distribution employing people to write code that

any sort so to new users it's woeful for them – but it never claims to be for them.

Probably the two distributions I use most are Debian and SuSE. Debian for when I install it for someone, and SuSE for when I leave new users to do it themselves. Debian simply because its repositories are huge and tend to work, so if I end up administrating those machines I end up having fewer headaches (but there's always some). SuSE because of all the custom distribution-specific configuration tools it is the least fragile and most professional behaving so most people can usually fudge their way through the install and configuration.

Atomic Going from coding to building, you're also passionate not only about building PCs, but making them silent too. How did you get interested in the silent PC scene?

CK We can thank the Pentium 4 for that. After upgrading to a relatively high spec P4 for the

vibrations. It is an addictive past time! What other mods have you done to your main box to make it silent?

CK After a few less satisfactory attempts and getting lots of excellent advice from silentpcpreview.com, I have managed to silence that very same CPU – and am still using it today. Currently I have it in an Antec SLK3000B case which has excellent airflow. There is one case fan – an Aerocool 2000 turbine 120mm fan running at 7v which is about 550rpm, and I have a modded 120mm fanned power supply with the same fan. The CPU heatsink is a Zalman 7000 Copper heatsink and I removed the stock 92mm fan and put a 92mm SilenX fan on it which is running off the PWM controller of the motherboard and I use software control in Linux to control the speed. Most of the time it sits at an inaudible 300RPM. I also have a Maxtor 80GB single platter drive that sits on padded foam instead of the hard drive cage



and I use acoustic management (from Linux software again) to keep it quiet. I can't measure the actual sound produced by this PC because normal sound pressure level meters only go down to 40dB unless you get professional ones which are ludicrously expensive. I live in a very quiet part of Melbourne and I can still hear this damn PC at night even though I estimate it's producing around 17dB.

Atomic What's the most enjoyable part of building silent PCs for you?

CK It's just one of those scenarios where I love proving to others that what the industry is providing need not be as appalling as it currently is. I cannot believe the average consumer is happy to buy a PC that is louder than any other electrical component in the house – and worse – that people will try and 'improve' their cooling by making it as loud as a vacuum cleaner.

Atomic What's your next planned silent PC project?

CK I'm waiting for dual-core 64 bit Pentium M based CPUs to hit the market and their matching Intel chipset motherboards before upgrading. Their much lower power consumption, combined with the massive yet short pipeline caches make them ideal for high performance with low heat production; and low heat production means easy to make quiet.

Atomic In some odd way do silent PCs, Linux, and being a doctor all tie in together?

CK Silent PCs and Linux is a given since I spend so much time at the computer. As for Linux and my trade, there is a connection. It is no coincidence that I started tackling Linux at the same time that I was completing my training in Anaesthesia. Towards the end, the intellectual challenge in the advanced training program had withered away. Everything was suddenly easy. One thing I've always needed was some intellectual challenge that I enjoyed. That's where Linux fits in; It provides a fun pastime that keeps me challenged as I continually push what I'm trying to do with it.

Atomic What advice would you give to others seeking an intellectual challenge?

CK Getting very philosophical here... I don't recommend going seeking intellectual challenges just for the sake of it. If it is interesting to you and fun then the enjoyment of achievement is much greater. Generally I don't know if I can do something or not unless I try to do it first. Often that's when I discover if it's a challenge or not, and perseverance is the key to succeeding (I rewrite lots of my code before I'm happy with it for example).

Atomic What does your wife think of your computer based hobbies?

CK Initially she didn't understand the attraction at all, but since she has been incredibly

supportive since we've been able to find some sort of reasonable balance between work, family and computers. Unrestrained I would wither away and die sitting in front of a computer day and night and I'm thankful for the sanity my family brings to my hobby :)

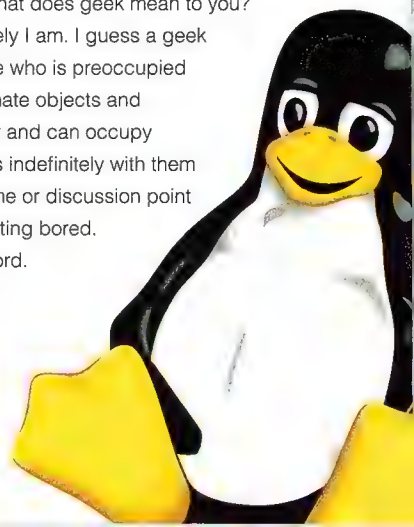
Atomic Any other passions?

CK I still enjoy high performance motor vehicles and have been fortunate enough to take my car on the track in the past. I had a serious audiophile interest which made me strive to find the absolute sound, investing in some serious hi-fidelity and building my own speakers, which then slowly turned into a love of classical music. More physical pursuits include downhill skiing and scuba diving in the past. Fine food, wine, coffee and cognac are a bit of a passion at the moment too.

Atomic Do you consider yourself to be a geek? What does geek mean to you?

CK Definitely I am. I guess a geek is someone who is preoccupied with inanimate objects and technology and can occupy themselves indefinitely with them as a pastime or discussion point without getting bored.

Atomic Word.





Be there, wherever you are



ASUS W1, W2, A5 and A7 Notebook Series Offer Wireless Digital TV Broadcast

ASUS has once again demonstrated its engineering strength with the built-in DVB-T (Digital Video Broadcasting-Terrestrial) feature. With this revolutionary digital technology, wireless TV broadcasting right out of the notebook is possible whenever and wherever.

*Remote controller is a standard accessory for the W1, W2, A5 and A7 Notebook Series, however the remote controller style may vary with each model.



Asus remote controller



**ASUS W2 Series
Mobile Digital Home**

- Intel® Centrino® Mobile Technology
- Intel® Pentium® M Processor 700
- Mobile Intel® 915PM Express Chipset
- Intel® PRO/Wireless Network Connection 30211 a/b/g
- Microsoft® Windows® XP Professional
- 17" Zero Bright Dot Widescreen with Color e-Shine & Crystal Shine Technologies
- ATI Mobility™ Radeon™ X200 (PCI-Express™)
- TV: Analog TV / Hybrid TV
- Bluetooth™




**ASUS W1 Series
Mobile Digital Home**

- Intel® Centrino® Mobile Technology
- Intel® Pentium® M Processor 700
- Mobile Intel® 915PM Express Chipset
- Intel® PRO/Wireless Network Connection 30211 a/b/g
- Microsoft® Windows® XP Professional
- 15.4" Zero Bright Dot Widescreen with Color e-Shine & Crystal Shine Technologies
- ATI Mobility™ Radeon™ X200 (PCI-Express™)
- TV: Analog TV / Hybrid TV
- Bluetooth™



**ASUS A5 Series
Personal Entertainment Center**

- Intel® Centrino® Mobile Technology
- Intel® Pentium® M Processor 700
- Mobile Intel® 915PM Express Chipset
- Intel® PRO/Wireless Network Connection 30211 a/b/g
- Microsoft® Windows® XP Professional
- 15.4" Widescreen with Color e-Shine Technology
- TV: Analog TV / Hybrid TV
- FM Radio
- Bluetooth™



**ASUS A7 Series
Personal Entertainment Center**

- Intel® Centrino® Mobile Technology
- Intel® Pentium® M Processor 700
- Mobile Intel® 915PM Express Chipset
- Intel® PRO/Wireless Network Connection 30211 a/b/g
- Microsoft® Windows® XP Professional
- 17.1" Widescreen with Color e-Shine Technology
- ATI Mobility™ Radeon™ X700
- TV: Analog TV / Hybrid TV
- Bluetooth™



2 Years
Global Warranty



Colour Shine
Gloss Type Panel

2 Years Australia Wide Pickup & Return
2 Years International Warranty

ASUS®
HEART OF TECHNOLOGY

Call :: 1300 ASUS 88 Visit :: www.asus.com.au

x-ray

Looking at tech from the inside!

DirectX 10 and you

Logan Booker delves into the depths of DirectX 10, Microsoft XNA and beyond.

You'd have an easier time finding John McLane in a high-rise building than a recently developed game that doesn't interface with DirectX. You really can't escape it and it's for this precise reason that DirectX is getting an overhaul in Vista, Microsoft's next operating system.

The company has accepted that graphics and 3D accelerators are a part of the everyday PC user's life, so Vista will embrace the hardware and provide the software, delivering a solid, dependable platform for game developers and players alike.

Windows Vista Display Driver Model (WDDM)

The Windows Vista Display Driver Model is an integral part of the new DX platform. By far the biggest change is the shift to user mode drivers, isolating the software systems from each other and from the core OS. In layman's terms, developers will be able to develop drivers faster, while gamers can look forward to driver installations that don't require reboots and rock-solid stability. Of course, fundamental

parts of the driver will still reside in kernel mode.

The new model opens the way for a more straightforward approach to accessing the GPU. Instead of being treated as an optional extra, developers will be able to share the GPU with other processes and page memory without worrying about its limits, in essence turning it into a virtual resource.

Separate from WDDM is the Graphic Display Interface (GDI), which is no longer hardware-accelerated. The GDI and DirectX applications will cease to compete for the desktop. When they do, DX apps can throttle their use of the GPU depending on resource demand.

DirectX 9.0 Extended (D3D9Ex)

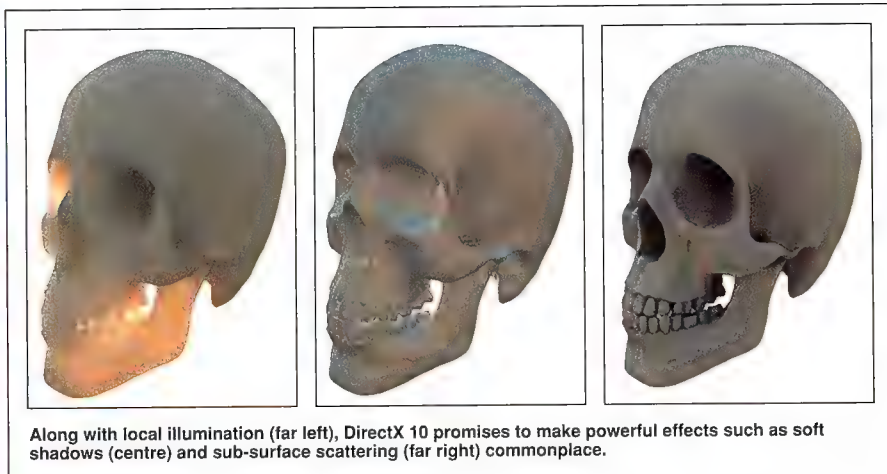
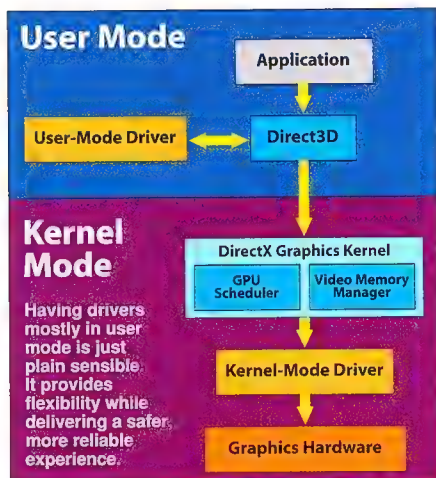
With WDDM explained, we can move on to DirectX 9.0 Extended, or D3D9Ex. Any excitement you may have regarding DirectX 10 would be quickly quelled if all your pre-Vista games were to stop working in the new OS.

Of course, this isn't the case, and Vista will have support in the form of an extended version of DirectX 9.0.

It will encompass a few of the changes planned for DirectX 10, as well as providing backward-compatibility for older games in Vista. According to Rudolph Balaz, program manager for Microsoft, they'll 'just work'. It's worth noting that Aero, the Vista desktop and the Windows Presentation Foundation (formerly Avalon) are built on D3D9Ex and not DirectX 10.

Although much of D3D9Ex is designed to make the developer's life easier, it does include a number of benefits for the user. If coded so, games can take advantage of resource sharing between different applications, limited GPU sharing through thread prioritising and video memory virtualisation. In addition, D3D9Ex has better error handling, and can detect and inform when bad code is causing it to crash. The last major benefit is better handling of the retention of graphics data though the addition of a coded resource 'residency' call, saving on bandwidth and processing time.

D3D9Ex is also the API that Microsoft's OpenGL driver will be wrapped over. We'll cover the implications of this later.



Along with local illumination (far left), DirectX 10 promises to make powerful effects such as soft shadows (centre) and sub-surface scattering (far right) commonplace.



DirectX 10 (formerly Windows Graphics Foundation)

When people say 'DirectX' they usually mean 'Direct3D'. This misnomer is Microsoft's own fault as the last three or four versions of DirectX have focused almost entirely on (and evangelised) the 3D API. Instead of fighting this trend, Microsoft has decoupled many of the components that are a part of DirectX and incorporated them into XNA, which we will cover shortly.

DirectX 10 is incredibly forward-thinking and a godsend to anyone with even a remote interest in getting the most from their games. There are countless changes that have occurred under the bonnet, so for the sake of clarity we're going to focus on those that will make games look better and run faster.

Support for the General Purpose GPU (GPGPU)

ATI has the jump on NVIDIA in this case with the X1000 series, but both vendors are working toward making the GPU a flexible enough processor that it can share some of the burdens of the CPU and vice versa. Changes in DirectX 10 to support this include strict rules on the precision of arithmetic (to facilitate easy load balancing between GPU/CPU), the ability to share GPU resources like fragment shaders and video RAM and giving the GPU the ability to figure out more for itself without interference from the CPU ('Stream Out', see diagram right).

Shader Model 2.0 is baseline

As part of Microsoft's policy on strict feature support, DirectX 10 will require all video cards to support Shader Model 2.0 as standard. While SM 3.0 is more efficient than SM 2.0, both are capable of producing the same quality of visuals and so it provides a reasonable trade-off for consumers between the latest graphics cards and older models. As expected, SM 4.0 will be part of DirectX 10.

Unified shader core

DirectX 10 will make the unified shader core on the PC reality. Depending on the demand, the GPU will allocate pipelines for either vertex or pixel shader processing to improve performance and efficiency. This will simplify the coding of shaders in general and allow for automatic load balancing by the GPU.

Geometry Shader and Stream Out

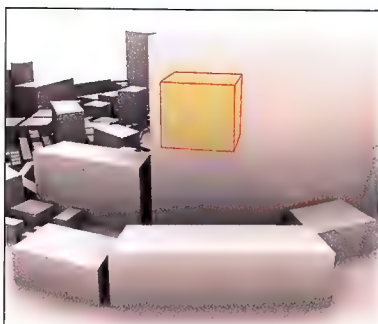
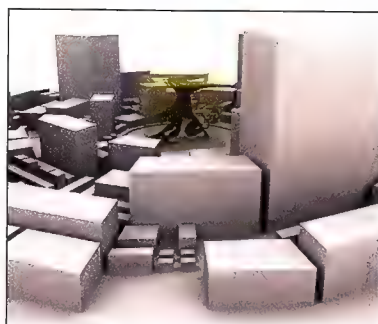
Easily the coolest addition to the rendering pipeline is the Geometry Shader. The main purpose of the shader is to allow the GPU to work on whole primitives instead of its individual parts, while Stream Out lets the shader reuse data straight from the rendering pipeline. Not only will working on primitives instead of vertices improve rendering speed significantly, the two components working in concert can do skin, power particle engines and perform multi-pass lighting independent of the CPU.

Normal map compression

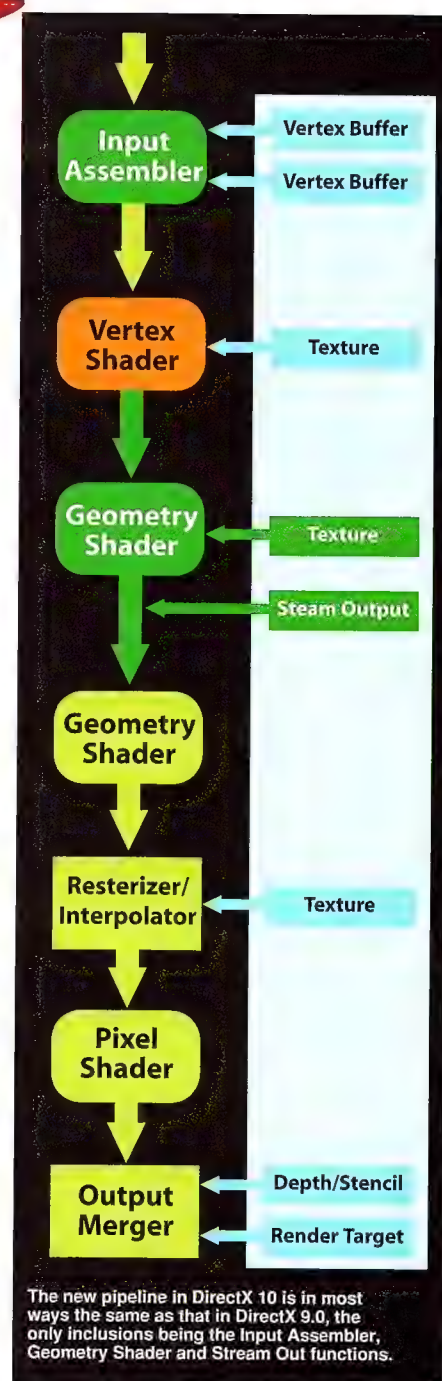
According to DirectX 10 presentations, the API will support normal map compression natively. At this time it's not clear whether this is an implementation of ATI's 3Dc or if there will even be support for 3Dc, or if Microsoft has designed its own normal map compression algorithm (DXTC). We just know that it's there.

Predicated rendering

Predicated rendering is another feature that works independent of the CPU and allows the GPU to perform occlusion and culling by itself. The performance benefits of this speak for themselves.



Now you see it, now you don't. Whole model occlusion done all by the GPU. That's the power of predicated rendering kids.



Performance tweaks and initiatives

Speaking of performance, DirectX 10 and its design philosophy have undergone a few fundamental changes to make things faster that aren't necessarily revolutionary.

Microsoft is now working more closely than ever with the likes of NVIDIA and ATI in an effort to define current standards and future standards and reduce the complexity of their drivers.

Planned tweaks to the pipeline will reduce register updates and Microsoft is working hard to eliminate on-the-fly shader recompiles that



It's shaders that have given us some of the most beautiful and realistic environments to date. But they're also demanding on graphics resources. DirectX 10 promises to streamline the use of shaders and make them not only easier for developers to implement, but greatly boost their performance also.

have a tremendous performance hit. Right now, Microsoft is aiming to reduce the overhead of DirectX 10 by 90 percent compared to DirectX 9.0. With what we've seen so far, this is not an unreasonable goal.

No caps and explicit feature support

Microsoft will be enforcing explicit feature support in DirectX 10 onwards and chips that don't comply will not run under the new API. As a result, developers will no longer need to perform capability or 'caps' checking.

The company has been working with ATI and NVIDIA to make sure this isn't a problem, but don't expect to see innovations in the vein of T&L, 3Dc and SM 2.0b being pushed into the market early. This is a double-edge sword in that it will prevent NVIDIA and ATI from bringing competitive advantages individually to market, crippling early innovation and levelling a playing field that shouldn't be levelled. On the bright side, once DirectX 10 is with us, you'll be able to buy a graphics card in confidence knowing it'll support pretty much anything the API can throw at it.

OpenGL

When DirectX 10 was first announced (and known as WGF 2.0), it looked as though OpenGL would be wrapped around DirectX, crippling its performance and limiting its usefulness. While this is the case in one instance, it doesn't mean your OpenGL games and apps will be crap under Vista.

ATI and NVIDIA can (and will) provide users with Installable Client Drivers, or ICDs, for OpenGL, so that calls to the API will be properly handled by the vendor's drivers. If the ICD

isn't there then Vista will default to Microsoft's OpenGL driver, which goes through the DirectX 9.0 Extended API and hence will suffer from performance penalties as well as restricted use of extended capabilities.

This means that games like Doom 3 will work under Vista exactly as they did in Windows XP, as long as you have an OpenGL driver from your card's manufacturer.

Microsoft XNA

The last topic we're going to cover is XNA and as has already been mentioned, XNA is the result of Microsoft separating the DirectX API into individual parts.

These parts have been repackaged into

XNA, and will provide developers with a universal platform and set of tools to create games with.

These tools include High Level Shader Language (HLSL) support, the Performance Analyzer for DirectX (PIX), XAudio and the Cross-Platform Audio Creation Tool (XACT), as well as Visual Studio, the Xbox XDK and DirectX SDK. Along with the tools, XNA will enforce file formats and coding practices to make porting games as easy as possible (at least from Xbox to PC and vice versa).

XNA itself is being referred to by Microsoft as 'XNA Studio' furthering its intended role as a development platform, and not a replacement for DirectX.

Next-gen ain't good enough

Believe it or not, Vista and DirectX 10 are not designed with current graphics hardware in mind. According to Microsoft, when Vista hits, we'll need real 'next-gen' cards. It's a shame we don't know what those cards are yet!

The most prepared GPU vendor at the moment is ATI. The company has only recently released the R520-based X1000 series that makes use of an enhanced memory controller, far superior (in theory) to current crossbar architectures. The shader-bias design also prepares it for future titles that will rely on complex fragment shader processing rather than simple texturing. No doubt NVIDIA will debut a new architecture before Vista hits, but ATI already has a great foundation to build on.

The need for a high-spec graphics card for Vista isn't much of a revelation when you consider MS wants hybrid flash/magnetic storage drives for the OS as well, giving legs to the instant-boot PC. So, if you're trying to build a PC to anticipate the launch of Vista, don't be shocked if it doesn't make the grade.

Just take a look at the CryEngine 2 demo clips floating around the Internet – you'll need some pretty high-end gear to get that sucker going at a playable frame rate!



WinFast®

Motherboard

WinFast 6150/6100 series motherboards:
High performance integrated graphic solution
gives you experience virtual reality!



Kiss your old graphic card good bye.

6150K8MA-8KRS

- AMD Athlon™ 64/64FX processors, Socket 939
- NVIDIA® PureVideo™ Technology
- 2000 MT/s HyperTransport
- Dual channel DDR400 / DDR333 / DDR 266 DRAM x 4DIMMs, Max 4GB
- PCIe x16
- TV out
- 4 Serial ATAII / 300 w / RAID 0, 1, 0+1, 5
- 7.1 channel (Realtek)
- GbE LAN (Marvell)
- 8 USB 2.0 ports



NVIDIA
GEFORCE
6150

NVIDIA
NFORCE
430

Featuring
HD Video

6100K8MA-RS

- AMD Athlon™ 64/64FX processors, Socket 939
- 2000 MT/s HyperTransport
- Dual channel DDR400 / DDR333 / DDR 266 DRAM x4 DIMMs, Max 4GB
- PCIe x16
- 2 Serial ATAII / 300 w / RAID 0, 1
- 5.1 channel (Realtek)
- 10/100M LAN (Realtek)
- 8 USB 2.0 ports

6100K8MB-RS

- AMD Athlon™ 64 / Sempron™ processors, Socket 754
- 1600 MT/s HyperTransport
- DDR400 / DDR333 / DDR 266 DRAM x2 DIMMs, Max 2GB
- PCIe x16
- 2 Serial ATAII / 300 w / RAID 0, 1
- 5.1 channel (Realtek)
- 10/100M LAN (Realtek)
- 8 USB 2.0 ports

LEGEND
 Performance Technology

Warehouses/ Sales offices
 S.A - Edwardstown (Head Office) Ph.08 84019888; adsales@legend.com.au
 VIC - Clayton Ph. 03 85497170 mlsales@legend.com.au
 NSW - Gladesville Ph. 02 94486769 sydsales@legend.com.au
 QLD - Coorparoo Ph. 0733970789 bnsales@legend.com.au
 W.A - West Perth Ph. 08 92296377 plhsales@legend.com.au

ALTECH
 computers
 www.altech.com.au

Sydney Ph. 02 8831 9999 sales-syd@altech.com.au
 Melbourne Ph. 03 9558 5090 sales-mel@altech.com.au
 Brisbane Ph. 07 3017 2000 sales-bne@altech.com.au
 Perth Ph.08 9242 8822 sales-wa@altech.com.au

www.foxconnchannel.com

Get real.



Enjoy realistic gaming experiences on the XPC SD31P featuring the Intel® Pentium® 4 Processor with HT Technology.



Shuttle XP17: Reddot design award 2005

XPC SD31P



◀ **It all connects**

Integrated media ports make it easy to share precious moments with family and friends.



◀ **Superior style**

The XPC with stealth drive covers is elegant in every environment.



◀ **Quiet and cool**

Silent X technologies deliver optimized cooling for exceptional stability and comfort.

Logon to au.shuttle.com today and learn more about the world's best-loved SFF PC.

Official Distributors in Australia

Altech Computers

<http://www.altech.com.au>

Sydney (02) 8831 9999
Melbourne (03) 9558 5090

Brisbane (07) 3017 2000
Perth (08) 9242 8822

Multimedia Technology

<http://www.mmt.com.au>

Sydney (02) 9415 8685
Melbourne (03) 9837 2500

Brisbane (07) 3260 3820

Official Distributors in New Zealand

CONEXTECH

<http://www.conextech.co.nz>

Auckland 64-9-4151020

ZCOM Computer

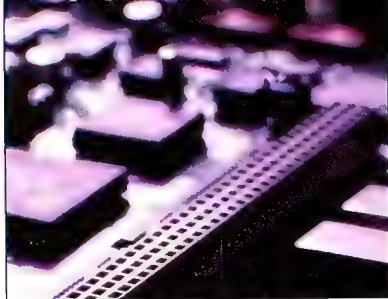
<http://www.zcom.co.nz>

Auckland 64-9-5800222



short circuits

How cool are zoomed up shots of cutting-edge hardware?



Samsung has reportedly produced the first 512MB DRAM chip based on a 70nm process using Metal-Insulator-Metal technology. Although this doesn't mean much for the average computer user, it will allow Samsung to get bigger yields for the same cost.

AMD recently opened a 300mm semiconductor fabrication plant in Dresden, Germany. The facility, called Fab 36, is currently set up to produce chips on a 90nm process however the company plans to transition to a 65nm in the near future. According to sources, AMD plans to have Fab 36 increase the company's processor output by 100 million by 2008.

Plextor has a new DVD+/-RW burner on the market, called the PX-760A, that's capable of writing to DVD +/-R media at 18x and +/-RW media at 10x. At the time of writing the only available information for the PX-760A was in Japanese, making it impossible to know when it will be available here.

HD DVD, one of two successors to the DVD format along with the Sony-backed Blu-ray, may do away with the now infamous region coding that prevented users from watching overseas DVDs in their locally-bought player. According to a statement by Hisashi Yamada, a representative for Toshiba Digital Media at the DVD Forum Conference 2005 in Japan, region coding has proved 'unpopular' with the industry and consumers alike.

tech trends

Quenching your thirst for the latest technology and hardware happenings

Creative's next-gen sound processor doesn't seem to sit well in all systems.

X-Fi doesn't fly with nForce4

Is Creative's wonder card the X-Fi in trouble? Logan Booker reports

Reminiscent of the days when the Sound Blaster Live! and VIA's KT133A had trouble co-habiting, Creative's forums (forums.creative.com) were full of activity recently after a problem was discovered with the company's latest sound card, the Creative X-Fi, and certain boards sporting NVIDIA's nForce4 chipset.

According to initial user reports, the X-Fi caused 'unknown PCI device errors and non-booting issues' on various nForce4 motherboards. A Creative spokesperson posted the following response to these concerns:

'A problem was identified on nForce4 based systems where the system ran into difficulties, related to the enumeration of the cards with 2MB (X-Fi XtremeMusic and X-Fi Platinum).

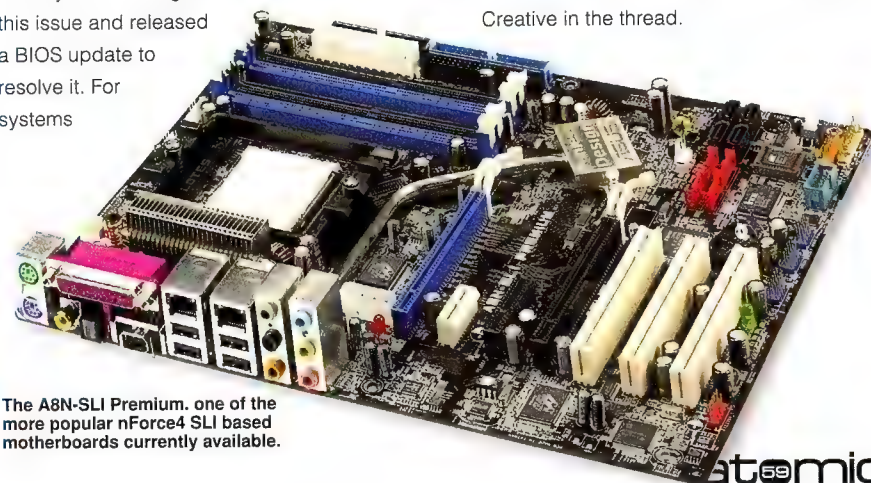
'Some motherboard manufacturers have already acknowledged this issue and released a BIOS update to resolve it. For systems

where a BIOS update is not available we will be providing an alternative resolution in the form of a replacement card with modified firmware.'

Further posts from users revealed that the problem was isolated to particular chipset/board combinations and the solution often enough was a simple BIOS update – as was recommended by Creative. At the time of writing, not all vendors had a BIOS update available.

If you own an X-Fi and an nForce4 motherboard and are experiencing freezes, unknown PCI device errors, BSODs and repeated reboots, then check out this thread on Creative's forums: forums.creative.com/creativelabs/board/message?board.id=soundblaster&message.id=26289.

Even if you can't get a BIOS update you can use the firmware workaround provided by Creative in the thread.



The A8N-SLI Premium, one of the more popular nForce4 SLI based motherboards currently available.

4x the fun

Why have two 7800 GTX cards in SLI when you could have four? **Logan Booker** investigates.

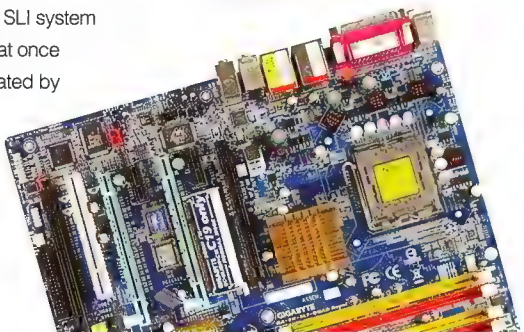
Gigabyte, anticipating what might be the next big thing, has come out with a motherboard that supports four PCI Express graphics cards. The GA-8N-SLI-Quad Royal comes with four PCI-E slots that support up to 16 PCI-E transport lanes. These slots can be assigned eight high-speed PCI-E lanes each, more than enough for four 3D accelerators. The unfortunate thing is that two of those cards won't have much to do.

The idea of buying two and running them in parallel is fancy enough, but spending twice that on two more for a quad setup? It's asking a lot, especially as there's no driver support from NVIDIA at the time of writing. So there's no benefit on the gaming side. At the moment a 'quad' SLI system is only good for running ten displays at once – something that has been demonstrated by a number of enterprising review websites but has almost zero practical use for even the most dedicated gamer.

Apart from the four 16x PCI-E slots, the Royal is a fully-featured motherboard, capable of taking a

Pentium 4 processor via NVIDIA's nForce4 for Intel core logic chipset. There's 10 USB 2.0 ports, 3 FireWire ports, 2 Gigabit Ethernet ports and support for 8GB of RAM so there's no argument over its status as an enthusiast board.

Perhaps if NVIDIA is nice enough to implement quad SLI into a driver release then the GA-8N-SLI-Quad Royal might be a tempting option for the frame whore. For now, it's an extremely solid-looking board with a novelty extra. We'll be sure to give it a good once over as soon as we can and reserve further judgment until then.



Home of hardware

There's nothing like some cool hardware to send a tingle down your spine, says **Logan Booker**.

No doubt you've heard of the upcoming technological extravaganza known as Atomic Live 2005. It's the event that has it all for the performance enthusiast and gamer. You'll cry if you miss it. So don't miss it! Get your booty down to The Entertainment Quarter (formerly Fox Studios) on December 8. Understandably you'll want to know what we'll have for you, so here's a teaser.

Firstly: Hardware. It'll be there in spades, clubs, hearts and diamonds. Not only will there be big vendors like Gigabyte, ASUS, Seagate and more presenting their wares and technology in the expo hall, but you'll have a chance to win bits of their awesome gear. Even if you don't manage to bag a prize, you'll still have an opportunity to get exclusive Atomic Live 2005 discounts on video cards, motherboards and more. You can even ask these guys questions about their hardware! Overclocking, specs, whatever – just yell them out!

If that's not enough for you, then you'll be delighted to know that there will be some of the hottest Hotboxes on display. Seriously, you'll be changing you pants on a minute-by-minute basis as you gaze upon these spectacles. Talk to their makers and ask them how they did it.

Still not satisfied? Then try event showbags full of goodies. Or chat to the world famous Dr Karl. Maybe competitive LAN gaming is the thing for you, or even having the chance to play the first Xbox 360s in Australia. You could always just relax and play Serious Sam 2 and Elder Scrolls 4: Oblivion or chill in the Xbox Lounge.

Atomic Live 2005 is the event of the year. It's tech, hardware and gaming rolled into one exciting day. And we'll be there, too.

But don't wait for that day – you need to register now to get in on this niftiness. Head to www.atomicmpc.com.au/atomiclive and make your dreams come true!

atomic

Cyber Snipa™



Dominate the enemy with the new Cyber Snipa™ FPS Game Pad

Available from: AUS

Harvey Norman

Gw Gameswizards

Anyware™ EB GAMES electronics boutique

www.cybersnipa.com

groundzero

Technology from the front lines.

Closer to quietness

Daniel Rutter wants a drive so fast and so quiet that it's the fastest and quietest.

So – what's it take to build a PC with no moving parts? No hard drives, no fans. Disco balls are allowed, as long as they don't rotate. I'm not talking about an industrial process controller, network appliance or GPS-linked 386 to tell dozy tractor drivers when to do their U turns. I mean a real home-or-business computer on which you can, should you desire it, run Windows.

People have been fooling around with this sort of thing for years, and some of the components involved are straightforward. A case with a whole lot of ventilation holes, with special attention paid to the power supply vents – Dremel, ahoy!

A video card made to run without a fan – or fanned card retrofitted with a humungous heatsink – and an even more humungous heatsink on the CPU, if you're not willing to settle for some low-heat VIA product.

Getting enough airflow through the box can still be a challenge, and many no-moving-parts projects have ended with their creators admitting defeat and installing one large slow silent fan.

Two recent developments have made rotating-object-free computer projects a lot easier. First is the continuing slide in flash RAM card prices. A CompactFlash memory card plugged into a cheap pin adaptor turns into an ATA drive that'll work on any motherboard; it's the poor man's Solid State Disk (SSD). As I write this, 'two-gigabyte' (formatted capacity 1.9 gigabytes...) CompactFlash cards are under \$200 on eBay. That's about a fifteenth of what a couple of '1GB' cards would have cost you three years ago, when I last talked about Flash SSDs in these pages.

For a basic Win98 machine, a 2GB CompactFlash card makes a great system drive. Just install a slab-o-RAM (also cheap), remember the system tweak that stops Win98 from freaking out over more than 512MB of memory (support.microsoft.com/kb/q253912), turn off virtual memory, and you're in business.

You need virtual memory turned off because Flash RAM will only last for a limited number of write cycles. You can read from your memory card until the cows

come home, but millions of writes will kill the card.

The card firmware spreads writes out, so Flash cards last very well in digital cameras, MP3 players and PDAs. If you put a Windows swap file on a CompactFlash card, though, you'll toast it very quickly.

Win98 is happy (and fast) with no swap as long as there's enough physical memory. Win2000 and XP aren't. You need at least some swap space.

That swap space can, in theory, be on a good old fashioned RAM disk, but not if the RAM disk driver starts up after Windows has already tried to find the swap file. Your old DOS RAMdisk driver will work great – in Win98, which doesn't need it.

This brings us to the second development, which is still, uh, developing. It's Gigabyte's i-RAM, reviewed in these very pages (see *page 42*). Perhaps it'll be possible to buy the thing by the time you read this.

As you know, the i-RAM is a battery backed PCI-card SSD with a SATA socket on it. You plug it into a slot for power and a drive cable for data, and your computer thinks it's a suspiciously small SATA drive, and will end up going for less than \$200. Sweet and sexy, all at once.

The last feature is the only one that's especially remarkable. Previous SSD-card products have had a few more zeroes on the end of the price tag.

The i-RAM's cheap enough to be of interest to regular humans who need something with near-zero 'seek time' for stuff like multi-track audio recording, and will be a big piece of the puzzle for people who don't want to wait for the electric-motorless PC of Tomorrow.

In the meantime, no-swap boxes are the way to go, and Win98 is enough for many purposes. Install 98 on a 1GB card, and you'll still have room for a whole lot of MAME ROMs! Lovely.

How many GBs of video do you think Dan has?

dan@atomicmpc.com.au



Getting airflow through the box can be a challenge, and many no-moving-parts projects have ended with their creators admitting defeat.

ALIENWARE
HIGH-PERFORMANCE SYSTEMS



MOBILE REINFORCEMENTS

DEPLOYING SOON



1800 005 003

WWW.ALIENWARE.COM.AU

Alienware can not be held responsible for errors in photography or typography. Actual case may vary in design. Alienware and Alienware Alien head logo are registered trademarks or trademarks of Alienware Corporation.

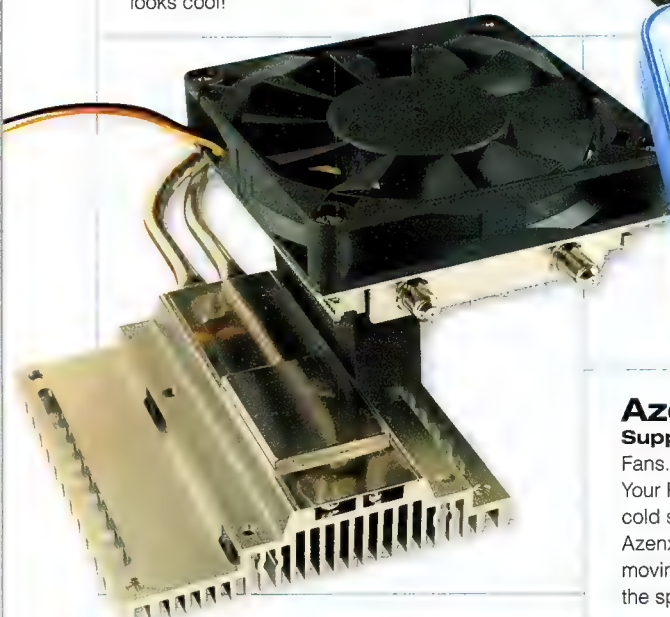
gearbox gifts

Give the gift of gadgets this Christmas with our Gearbox special!

Cyber Snipa Game Pad

Supplier Anyware
Website www.anyware.com.au
Price \$59

Like the dinosaur, keyboards will become extinct. Be it from virtual reality devices or a giant flaming comet, something will replace our beloved typing implement. In the meantime we have whacky devices like the Cyber Snipa Game Pad. Dedicated movement keys are prominent and blue, while all the major shortcuts are but a pinky or index finger away. We're not sure what any of it has to do with sniping, but hey, it looks cool!



Thermalright V1 Cooler

Supplier PC Case Gear
Website www.pccasegear.com.au
Price \$65

Heatpipes are all the rage these days and the Thermalright V1 Cooler is keeping the rage alive. If your video card is steamy thanks to an overclock, or simply ambient Australian summer temperatures, then this cooler may be the answer. Built much like a water-cooling radiator setup, the pipes draw the heat away from the main 'sink and disperse it using a fin/fan attachment. It looks fugly but if it gets the job done, then who really cares? Alright, all your mates with fully sick heatsinks might, but your video card will breathe a sigh of relief.



Azenx Blitzstorm System Cooler

Supplier PC Case Gear Website www.pccasegear.com.au **Price \$32**

Fans. There is a great love of fans right now, mainly because summer isn't that far away. Your PC feels the pain just as much as you do, however, while we can undress and take cold showers, your PC hasn't the luxury. So, instead, we have system coolers like the Azenx Blitzstorm above. It might not really blitz any storms, but it sure will keep the air moving inside your box. Be aware that it will eat up a card slot, so make sure you have the space before you purchase this finely tuned fan-filled device.

Netcomm HomePlug

Supplier Netcomm
Website www.netcomm.com.au
Price \$199

This cool kit is based on a very simple premise – why litter your abode with LAN cables or fork out for wireless when you've already got a network built right into your home? And every room has the ports you need already installed: power plugs. The Netcomm NP210 simply plugs into the wall, looks for one or more NP210 devices, and communicates between them at up to 14Mb/s. It's enough to share your broadband around without the need for wires or wireless.





Steel Sound Headphones

Supplier Gamerzstuff
Website www.gamerzstuff.com.au
Price \$179.95 (USB)

These babies are gaining quite a rep within the pro-gaming community, and deservedly so. The frequency response and equalizer has been tuned to deliver an extremely clean sound, so you won't miss anything, regardless of how many rocket launchers are going off next to you. For music they are a bit trebly, but still better than most headsets at the same price. The pull-out mic is cool too and does the job nicely – great for egotistical victory gloating after crushing your enemies under the heel of utter pwnage.



Flexiglow Illuminated Keyboard

Supplier Anyware
Website www.anyware.com.au
Price \$59

So your life goal is to be like Gollum and defy any natural light to ever touch your body again. Well and good, but how do you type in the dark? No problem! The Flexiglow will light up your life at the touch of a soft-pressed key. While the keyboard itself isn't as flexible and nice to use as more expensive models, it's pretty damn geeky to use a glowing keyboard. Nuff said.

Penguin Energy Gum

Supplier Cool PC **Website** www.coolpc.com.au **Price** \$2.50 each

For all you gum lovers, here's some sticky chews that'll keep you up at night. Putting caffeine into any food product will almost guarantee a certain level of affection for that product and chewing gum is no different. Packed with enough wake-up-juice to down an adult rhino, this Penguin Energy Gum is just the thing to help you last those extra few hours at a LAN tournament or escape the Chinese Mafia. There's Peppermint, Citrus and Kola Nut flavours, so even your mum and brother can give them a go. The only downside to these babies is that they don't retain their flavour for long, forcing you to swallow another caffeinated payload prematurely.

Low Profile Hard Disk cooler

Supplier Anyware
Website www.anyware.com.au
Price \$18.90

It's officially 'Coolers for toolers' month at Atomic, and to celebrate we have yet another device to keep one of your components at a nice, non-damaging temperature. The latest piece of gear to get the cooling treatment is your hard drive. Those suckers can get mighty toasty under the right (bad) conditions and just like anything else, heat can cause all sorts of trouble for storage devices. So whack on one of these Low Profile Hard Disk coolers and save your precious bits and bytes.



Nexus Real Silent 120mm fan

Supplier **PC Case Gear**

Website www.pccasegear.com.au

Price \$29

Who wants a noisy PC? No one! Well, except the deaf guy down the street. Only he's not deaf, he's just got fudge in his ears. Anyway, fans are a big source of noise, both mechanical and aerodynamic, so it pays to invest in fans designed specifically to push air with a minimal of noise. Nexus are regarded by silent PC nuts as the ultimate in quiet cooling, and they're now available in Australia for the first time. So don't put up with the noise, silence your box today!



ArctiClean

Supplier **Cool PC**

Website www.coolpc.com.au

Price \$9.50

Arctic Silver are renowned for their thermal pastes, and now they've released a product to remove them too. It's not just a gimmick either, the natural citrus based solvents in this kit actually work and leave your heatsinks and CPU/GPU surfaces as clean and smooth as a baby's bum. In fact, we tested it on a baby too and it made lots of giggling noises, a clear sign of approval. So there you go, a superior grease cleaner and baby pacifier. Oh ok, don't try it on the baby at home kids, mmmk?



Leadtek USB HDTV tuner

Supplier **BCN** Website www.bcntech.com.au Price \$129.95

TV is good. HDTV is better. Thing is, those clunky HDTV tuner boxes are super expensive and you need a TV capable of displaying those beautiful images. Bugger that, your LCD or CRT has greater detail, and with Leadtek's new USB HDTV tuner you can plug this little baby in and start watching digital TV in comfort and style. Its compact size makes it great for road warriors, or the geek clique, and all you need is an aerial and you're set. The software comes with preset station frequencies for countries around the world, including Australia. How good is that?



TP-Link gigabit switch

Supplier **PC Case Gear**

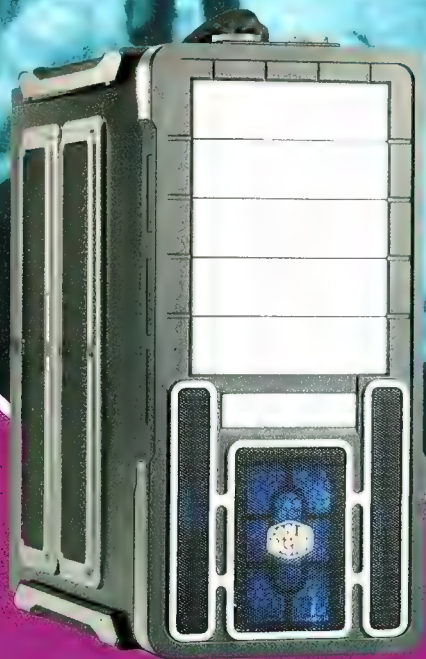
Website www.pccasegear.com.au

Price \$149

Everyone's got gigabit ethernet built into their machines these days, but how many of us are still running 10/100 network hubs? Once you've experienced gigabit you can't go back, and TP-Link make an affordable 8-port switch for your lovin'. That's right, *switch*. This means it'll happily take mixed clients of 10Mb/s, 100Mb/s, and 1000Mb/s and keep them all talking to each other sanely. Better than a kick in the pants or a night with the girlie. But don't tell her that.



Reload Your Ammo



AMMO 533

- ⇒ Unique design for tough enclosure
- ⇒ Superior air flow with heat dissipation holes on top and side
- ⇒ Intelligent handle design for easy carrying
- ⇒ Tool-Free mechanical design for quick assembly and maintenance
- ⇒ Firm and solid casing design forcefully contains your elaborate system

300 LIMITED "Dog Tag"
for registrants worldwide!

9/16-11/30

<http://www.coolermaster.com/activity/ammo533/register.php>



www.coolermaster.com



AMMO 533



AMMO 533



AMMO 533

framerate

Nathan Davis analyses his elite fragging skills on three hot gaming cards.

framerate

ASUS Extreme N7800GTX TOP

GPU **NVIDIA GeForce 7800GTX**
 Memory size **256MB**
 Core clock **486MHz**
 Effective memory clock **1350MHz**
 Memory type **256-bit DDR**
 Pixel pipelines **24**
 Vertex shaders **8**
 Video out **DVI; D-Sub adaptors; S-Video; composite**
 Video in **S-Video; composite**
 Price **\$999**
 Supplier **ASUS**
 Website **www.asus.com.au**

There's no argument that NVIDIA's seventh generation card is an absolute powerhouse. Slaughtering almost everything in its path in terms of both higher performance and quieter operation (thanks to the lower wattage), it's one hell of a laughing card. ASUS has somehow managed to drop off another few bars of sound from this beast, equipped with a slow yet massive eleven-finned fan. If you're after a high-end card that'll stomp good and hard, while keeping the peace, check this one out.

Sparkle GeForce 7800GT

GPU **NVIDIA GeForce 7800GT**
 Memory size **256MB**
 Core clock **400MHz**
 Effective memory clock **1000MHz**
 Memory type **256-bit**
 Pixel pipelines **20**
 Vertex shaders **7**
 Video out **DVI; D-Sub; component; composite; S-Video**
 Video in **None**
 Price **\$660**
 Supplier **Australia IT**
 Website **www.australiait.com.au**

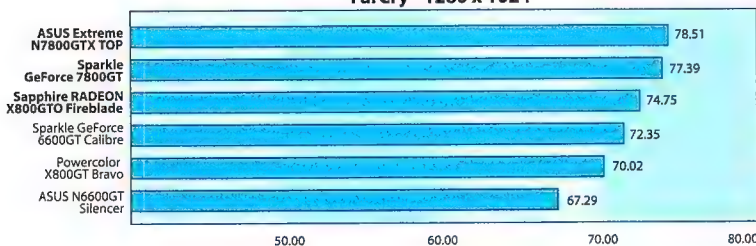
In comparison to the beefy ASUS 7800GTX card to the left, this lower profile card is much louder, relying on the smaller default cooling system as designed by NVIDIA. Nonetheless, it is still much quieter than many cards currently on the market. That said, considering the slightly massive drop in price, the value of this card is extremely high when comparing its performance against the likes of the mighty 7800GTX. This is a great high-end card minus the matching price tag.

Sapphire RADEON X800GTO Fireblade

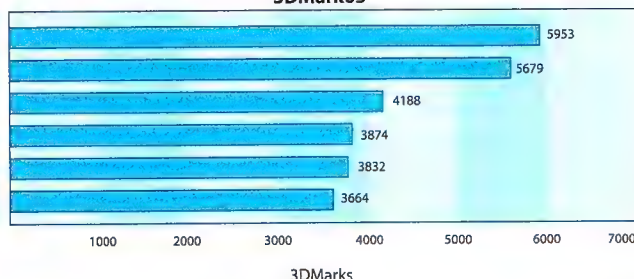
GPU **ATI RADEON X800GTO**
 Memory size **256MB**
 Core clock **398MHz**
 Effective memory clock **984MHz**
 Memory type **256-bit**
 Pixel pipelines **12**
 Vertex shaders **6**
 Video out **DVI; D-Sub adaptors; S-Video; component; composite**
 Video in **None**
 Price **\$TBA**
 Supplier **Sapphire**
 Website **www.sapphiretech.com**

Next to the X800 GT, the GTO is a faster card in ATI's new 'it didn't quite make it' line-up of graphics cards. The GTO cards are based around higher end models that couldn't run at their expected speeds. There's no telling exactly what the card was meant to be, unless you rip off the heatsink, but when you do, you could be in for a treat in terms of more free performance. That said, Sapphire's model is a tad on the noisy side, but otherwise it's a top performer this month. And it should be kinder to the wallet, too.

FarCry - 1280 x 1024



3DMark05



headtohead

Bite-sized comparative round-ups of the hottest gear

Sex on a stick

Lets face it, memory is like sex – the more you have, the better it is. So for your, er, pleasure **Ashon Mills** rounds up a ton of the best, just in time for Christmas.

Once upon a time 640k was enough for everyone, at least according to Bill Gates. Then people started to actually do things with their machines, and more memory was needed. Back at the turn of the century 256MB was standard, and 512MB was splurging. Today, the de-facto is 1GB if you want an even remotely useable machine.

And with releases of games like Battlefield 2, F.E.A.R., and Oblivion not to mention Windows Vista next year, it's rapidly becoming clear that 1GB is no longer enough.

So with the perennial 2GB upgrade path in mind we've rounded up a selection of some of the best 1GB paired memory modules currently available, to see how they stack up against each other, and which deserve your hard earned cash.

A sizeable volume

While more memory is most certainly *teh sex*, there is a tradeoff – addressing more is a greater load for the memory controller, and as a result all 1GB DIMMs require looser timings to run stable. You'll notice in the selection here that not one kit can sustain 2-2-2-5 timings – some do get close however.

That said you can still hit high frequencies, so you can make up for the difference a little. And overall, the benefit of 2G far outweighs any loss of speed which, to be honest, you'd have to be Shodan to actually notice.

HOW WE TESTED

For DDR testing an Athlon64 4400+ X2 running at 2.5GHz on an ASUS A8N-SLI Premium testbed was used. An old 512MB stick of Corsair XMS3200 came in handy to recover the system and get back into the BIOS when memory timings were too tight for the 1GB modules.

For DDR2 testing a Pentium 4 3.73GHz EE running on a ASUS P5N32-SLI Deluxe was used, and fortunately recovered itself quite well when specs were pushed too hard.

As much as possible, CPU frequencies were maintained between FSB changes.

First the lower limits, i.e the tightest timings, were found for each module at their rated frequencies to see if they were capable of more than the manufacturer claimed. For the DDR tests, this is 200MHz across the board while for the DDR2 testbed this was 533 and 667 respectively for the modules.

Then the upper limits of the modules capabilities were found by testing at increasingly higher frequencies until they became unstable. Then, at the next most stable frequency down, timings were adjusted as tight as possible.

For testing latency and memory bandwidth, Lavalys Everest and SiSoft Sandra were used.

All modules were tested at a Command Rate of 1T. While it's certainly possible to reach higher frequencies with 2T, a difference of at least 30MHz on the frontside bus is required to make up for the performance drop of swithing to 2T. With the more restrictive nature of these 1G modules, none of them could clock high enough to make the difference worthwhile.

Additionally, for Athlon64 systems you've probably heard a bit about memory dividers which allow higher FSB frequencies for the CPU while running the memory at a fraction. While dividers are great for maximising the potential of your CPU and memory respective to their limits, the bottom line is that any divider reduces the operating frequency of the memory bus, so hitting a higher FSB while using a memory divider doesn't reflect the maximum operating frequency of the DIMMs. For this reason all testing was done at a 1:1 ratio, so you can see just how much headroom the modules have when it comes to using them on your system.

The game, of course, is to find the fastest, stable, timings for a given bus frequency (with respect to the CPU). Which is exactly what we've done for you in this roundup.

Additionally, if you're thinking of mixing and matching modules to break the 1GB barrier, be aware it's also more work for your controller to manage four DIMMs over two. The Athlon64's memory controller needs to switch to a Command Rate of 2T when all four DIMMs are populated (at least for dual-sided DIMMs),

taking quite a performance hit in the process. As a result, this roundup focuses specifically on taking the 2GB upgrade path through the use of 1GB memory modules. And thanks to games like Battlefield 2 and F.E.A.R., manufacturers will be increasingly focusing on the performance capabilities of these big fat memory sticks.



Timings and ticks, wth?

New to the joys of memory timings? No worries. While motherboards feature all manner of tweakable options, all will at least utilise the following four settings – and they are also the most important.

Column Access Strobe latency (CAS, also known as CL) is the most beneficial, followed by RAS to CAS delay (RCD) and Row Precharge time (RP). Lower is always better. The fourth setting Row Access Stribe (RAS), bucks the

trend a little with Athlon64 systems where it's best set at 6, 7 or 8 regardless of all other values. The impact of RP is also small in terms of performance, but can help stability, so generally set both it and RAS according to stability.

There is one other setting too – Command Rate (CR), expressed as a timing of 1T or 2T (ticks). In fact, CR has the single biggest impact on speed, more so than CAS. In the sport of memory tuning, CR and CAS are the ones to

work at setting as low as possible. You will generally see these four values written as the sequence CAS-RCD-RP-RAS CR, and that's the convention used in this roundup.

Your BIOS may also feature a setting called Cycle Time. Though we don't cover it here, it's worth noting that this should be set to the total value of RAS + RP for best performance (if the RAM can handle it). Use tools like Everest and Sandra to check what settings your RAM runs at.

DDR MEMORY

G.Skill PC4000

Price **\$409** Distributor **Mittoni** Website **www.mittoni.com.au** Rated by manufacturer **250MHz @ 3-4-4-8**

G.Skill has only recently entered the Australian market and has hit the ground running with a range of value and performance driven memory modules.

Given the competitive price of these 2GB paired kit modules, they performed excellently. Managing 2.5-3-3-5 at 200MHz at stock 2.6V no problem they hit their limit at 255MHz @ 3-3-3-6 1T, pushing 6481MB/s with a low 50.8ns latency. Remarkably they did this all on

the same 2.6V. Upping the juice even as far as 3.0v and laxing timings to 3-4-4-8 didn't help pushing past this limit however.

Like most 'enthusiast' modules on the market, the G.Skills feature a spiffy aluminium heatspreader which never got too warm, even under load. All up a great mid-range set that was only beaten by the PQI kit for the value award based on price. Bravo G.Skill.

MIN 200 @ 2.5-3-3-5 1T MAX 255 @ 3-3-3-6 1T



OCZ PC3200 EL PLATINUM

Price **\$465** Distributor **Australia IT** Website **www.australiat.com.au** Rated by manufacturer **200MHz @ 2-3-2-5**

Don't let the modest rating fool you, the Platinum line from OCZ are their top of the range, and the PC3200 is specifically designed for tight timings at lower frequencies (hence the Enhanced Latency 'EL' moniker).

Indeed, this pair lived up to the rating at 200MHz with 2-3-2-5, and at a cool 2.6V. It actually sustained CAS 2 until 210MHz, but by 250MHz it was well and truly relying on CAS 3 to stay up.

The limit for this pair turned out to be a huge 270MHz at 3-3-3-6 1T using 2.8V, pushing 6612MB/s with a clean 47.8ns latency. This limit is beaten only by its big brother, the PC4000 EB Platinum.

With a noticeably heavy painted copper heatspreader the EL Platinum is a highly versatile RAM capable of super-tight standard timings and high clocks.

MIN 200 @ 2-3-2-5 1T MAX 255 @ 3-3-3-6 1T



CORSAIR 3500LLPRO

Price **\$589** Distributor **Altech** Website **www.altech.com.au** Rated by manufacturer **219MHz @ 2-3-2-5**

Corsair's 3500LLPro are so named for the super 'low-latency' they attain, in addition to the swank activity LEDs on the top. As with the OCZ PC3200 Platinum, this kit is designed for tight timings at stock frequencies, and it delivered 200MHz 2-3-2-5 no problem. The surprise with this kit is how far it managed to sustain these timings. It hit 219MHz as rated, but actually managed to go as high as 227MHz with CAS 2! This pushed some 6300MB/s, rivaling

the types of speeds much higher clocks and looser timings attain. Not surprisingly, these sticks managed 255MHz at 2.5-3-2-6 1T, an incredible result for CAS 2.5, but that's where the enjoyment stayed. Even with up to 3.0V, these babies couldn't push past 260MHz with looser timings. The 3500LLPro is the most expensive kit in our roundup and a clear performer, and yes the LEDs are sexy!

MIN 200 @ 2-3-2-5 1T MAX 255 @ 2.5-3-2-6 1T



Geil PC3200

Price **\$389** Distributor **Amitech** Website **www.amitech.com.au** Rated by manufacturer **200MHz @ 3-4-4-8**

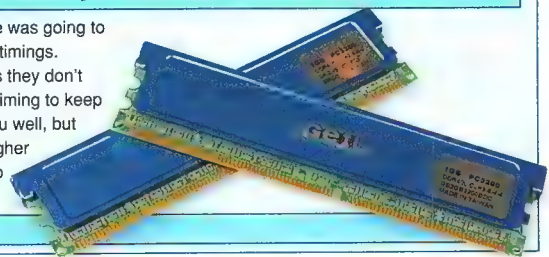
Geil's PC3200 entry isn't quite as snazzy as its competitors listed here, but then neither is the price. Geil have made a name for themselves making affordable, reliable memory modules and this PC3200 set lives up to the hype.

Despite the rating these sticks actually managed a mean 2.5-3-3-5 @ 200MHz, which is a nice surprise. In terms of headroom, however, they couldn't push past

235MHz @ 3-4-4-8 1T. No amount of juice was going to change this either, nor super-lax 3-5-5-10 timings.

While cheaper than the G.Skill modules they don't perform anywhere near as well. If you're aiming to keep the front side bus low, this kit will serve you well, but you could save a little money and get a higher ceiling with the G.Skill or PQI modules also featured in this roundup.

MIN 200 @ 2.5-3-3-5 1T MAX 235 @ 3-4-4-8 1T



OCZ PC4000 EL GOLD

Price **\$485** Distributor **PC Case Gear** Website **www.pccasegear.com** Rated by manufacturer **250MHz @ 3-4-4-8**

The Gold range from OCZ is aimed squarely at 'gamers' which, going by the company's website, turns out to be the next category down after the 'enthusiast' Platinum range.

Accordingly, the PC4000 Gold performed just under both Platinum modules in this roundup, managing a standard 2.5-3-3-5 @ 200MHz, a respectable 2.5-3-3-6 @ 230MHz, and true to the rating a clean 3-4-4-8 1T at 250MHz. In fact, it pushed a little further and hit 255MHz @ 3-4-4-8 1T,

pumping some 6322 MB/s, without too much trouble but couldn't do 260MHz no matter how much juice we supplied

Given the price, the PC4000 EL Gold is a good compromise between frequency range and performance, and would certainly find a happy home in many a gamer's rig. The gold coloured copper heatspreaders look swank too. It's a bit of gold chain bling for your PC!



MIN **200 @ 2.5-3-3-5 1T** MAX **255 @ 3-4-4-8 1T**

Team Group Xtrem PC4000

Price **\$425** Distributor: **Australia IT** Website **www.australiat.com.au** Rated by manufacturer: **200MHz @ 2-3-3-5**

Team Group are a new player from Taiwan that, like G.Skill, are just starting to make in-roads into the Australian market.

Their 'Xtrem' series is, naturally, tailored towards people with more eXtreme habits, like performance PCs. Unfortunately, this is the first kit we tested that didn't live up to its claims. It performed better than its rating at 200MHz, managing 2-3-2-5 no problem, but it

didn't climb much higher. Curiously, the SPD timing on these is an odd 250MHz @ 2-4-4-7 (there's not a 1G module we've found that can do CAS 2 at 250MHz) so we presume the SPD programmer was smoking some of the DIMMs when these kits were made. Indeed, the limit for this pair was just 225MHz @ 3-4-4-8 1T and no amount of juice or looser timings seemed to budge it.



MIN **200 @ 2-3-2-5 1T** MAX **225 @ 3-4-4-8 1T**

PQI Turbo PC3200

Price **\$369** Distributor **Golden Leaf** Website **www.goldenleaf.com.au** Rated by manufacturer **200MHz @ 3-4-4-8**

PQI is another lesser well known vendor in the Australian market, but is rapidly gaining a reputation for top quality RAM among the gaming populace.

The Turbo PC3200 modules sent through for this roundup are rated at 200MHz at 3-4-4-8. This is clearly a case of PQI underrated their modules, because the Turbo PC3200 hit as low as 200MHz at 2-3-2-5 without breaking a sweat.

Pushing the frequency up they managed to hit 250MHz without too much trouble, but we did have to lax the timings to 3-4-3-6. The ceiling turned out to be 260MHz at 3-4-4-8 and, like many modules in this roundup, the application of some hard juice didn't make a difference.

As the cheapest DDR set in our roundup this level of performance is exemplary, and for this it wins our value award.



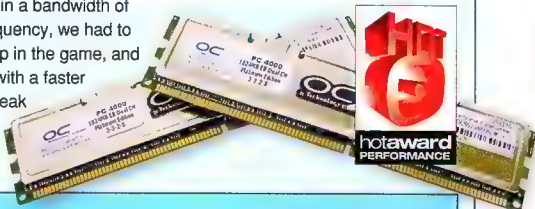
MIN **200 @ 2-3-2-5 1T** MAX **260 @ 3-3-3-8 1T**

OCZ PC4000 EB PLATINUM

Price **\$535** Distributor **Australia IT** Website **www.australiat.com.au** Rated by manufacturer **250MHz @ 3-3-2-8**

The PC4000 Platinum model is the Enhanced Bandwidth (EB) version of their enthusiast range, but this pair is no slouch in the tight timings department either. In fact, it matched the 200MHz at 2-3-2-5 stock speeds of the Corsair 3500LLPro, Team Xtrem PC4000 and its EL Platinum cousin, and then continued to match the Corsair 3500LLPro at 255MHz managing 2.5-3-2-6 1T at 2.8v, something its little PC3200 Platinum brother couldn't do. But the fun doesn't stop there. The ceiling for this pair was

a staggering 285MHz @ 3-4-4-8 1T, bringing in a bandwidth of 6678MB/s and low 48.1ns latency. At this frequency, we had to drop the 4400+ X2's CPU speed down to keep in the game, and thus the memory controller, so conceivably with a faster CPU (4800+ or FX-57) these DIMMs could break 7GB/s easy. Considering they're 1G sticks, that's almost erotic. Living up to the name, these sticks get our Performance Hot Award.



MIN **200 @ 2-3-2-5 1T** MAX **285 @ 3-4-4-8 1T**

DDR2 MEMORY

OCZ PC2-4200 EL Gold

Price **\$450** Distributor **Australia IT** Website **www.australiat.com.au** Rated by manufacturer **533MHz @ 3-3-3-8**

OCZ's DDR2 line is as extensive as their DDR collection, featuring both Gold and Platinum models.

The PC2-4200 Gold we tested here is rated to run a tight 3-3-3-8 at 533MHz which it does without blinking, pushing a neat 7645MB/s. Despite the gentle nudge of voltage the modules wouldn't run any tighter, and they couldn't quite make the next leap to PC5300 at 667MHz, managing just 651MHz at 4-4-4-10 2.0V. Demonstrating

that it's not always about frequency, this never the less gave a throughput of 7546MB/s.

As with the other OCZ modules in this roundup, the signature coloured copper heatspreaders worked well to dissipate heat and add that extra sense of bling. With a mid-range price for mid-range performance they're not bad overall, though you can get the same performance for cheaper from the PQI set on the next page.



MIN **533 @ 3-3-3-8 1T** MAX **651 @ 4-4-4-10 1T**

PQI Turbo PC2-4200Price **\$365** Distributor **Golden Leaf** Website **www.goldenleaf.com.au** Rated by manufacturer **533MHz @ 3-3-3-8**

Continuing the excellent price and performance ratio from its DDR cousin, we had high expectations for the DDR2 Turbo PC2-4200 set from PQI.

As it happens, it does indeed live up to the 533MHz at 3-3-3-8 rating, bringing in a tidy 7725MB/s, a small jump over the OCZ PC2-4200 Gold at the same settings.

Similar to the Gold however, the ceiling for these sticks also hit a wall at 651MHz with 4-4-4-10. No amount of juice

or lax timings could get it higher. At this level it managed 7483MB/s, with and a latency of 75ns.

Overall for the price this is again excellent performance. Unless you're doing some serious overclocking, this pair will serve you well.

As the cheapest 2G set in our roundup with great performance too, it's hard not to give it our Value award.

MIN **533 @ 3-3-3-8 1T** MAX **651 @ 4-4-4-10 1T****OCZ PC2-4200 EB Platinum**Price **\$695** Distributor **Australia IT** Website **www.australiait.com.au** Rated by manufacturer **533MHz @ 3-2-2-8**

OCZ's top of the line DDR2 modules are literally hot shiz. They meet their rating admirably with 3-2-2-8 at 533MHz, pumping an enormous 7921MB/s, almost breaking the 8GB/s barrier with these super-tight timings.

As with their DDR brethren, this platinum pair has a high ceiling, not just meeting PC5300 667MHz standards but flying right past it up to 711MHz at 4-3-3-8, all on 1.9V. If I was a motherboard, I'd like to have these

babies in my sockets. However, the performance comes at a cost – as the most expensive pair in the roundup you'll need to sell your granny and all her cats to get these (a fair trade, we think).

It was a hard choice not to give the Performance award to this pair, but the Geil PC-5300 Ultra just nudged them out. Still, you can't go wrong with these fantastic sticks.

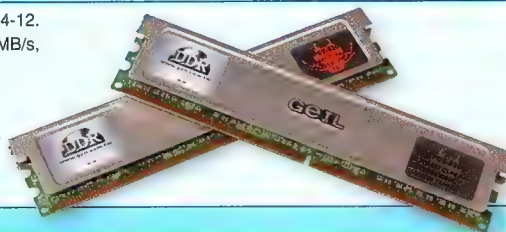
MIN **533 @ 3-2-2-8 1T** MAX **711 @ 4-3-3-8 1T****Geil PC2-5300**Price **\$439** Distributor **Amitech** Website **www.amitech.com.au** Rated by manufacturer **667MHz @ 4-4-4-12**

As with Geil's DDR offering, the DDR2 sets are quality modules. They take a different tack with the heatspreaders, going for a minimalist aluminium over heavy copper.

The PC2-5300 is an affordable entry into the mid-speed DDR2 arena, humming along just fine at the rated 667MHz at 4-4-4-12. This however is pretty close to the ceiling these modules are capable of, not

managing to go any higher than 711MHz at 4-4-4-12. This did however bring in a tasty speed of 7694MB/s, which is nice.

If PC5300 is the perfect compliment to your Pentium 4 beast, the Geil PC2-5300 sticks are definitely affordable and deliver exactly what they promise. Just don't expect to push them too much farther.

MIN **667 @ 4-4-4-12** MAX **711 @ 4-4-4-12****Geil PC2-5300 Ultra**Price **\$669** Distributor **Amitech** Website **www.amitech.com.au** Rated by manufacturer **667MHz @ 3-4-4-8**

Now this is more like it. Geil's PC2-5300 Ultra is the highest rating DDR2 in this roundup, and it shows. It hit stock speeds no problem on default voltages and proceeded to climb past the 711MHz limit the other modules couldn't break, but eventually levelled out at 727MHz using 4-4-4-10. This brought home a tasty 7714MB/s, but no amount of juice could push the modules higher.

Naturally this performance doesn't come cheap, as the second most expensive of the DDR2 modules tested here. That said, they are less expensive than the OCZ EB Platins and yet capable of hitting both the same PC-4200 and PC-5300 frequencies, and much higher. As a result the PC-5300 Ultra's get our Performance award. And let's face it, how can you go wrong with suave orange DIMMs?

MIN **667 @ 3-4-4-8 1T** MAX **727 @ 4-4-4-10 1T****Conclusion**

Well, we've covered more memory than you can poke a stick at (pun!), but there's a fine selection for you to peruse. There are a few things to keep in mind however.

Naturally, memory performance is a combination of frequency plus timings, and while tighter timings at a given frequency give better performance, looser timings at an even higher frequency can be better. As some of these modules demonstrate, there are high ceilings available to work with.

Of particular note for DDR memory on the Athlon64 is to push the CPU as far as you can, and then tweak memory to match. With its onboard memory controller, throughput is directly affected by and scales with the speed of the CPU.

Lastly, when considering modules don't be too concerned about throughput you read in reviews – aside from small differences, all memory modules will perform relatively the same at a given frequency and timing set. All of the modules listed here pushed the same

data at, for example, 200MHz @ 2.5-3-3-5 1T with a margin of 1-2%, which is why we didn't draw up a graph of the benchmark results.

What really sets the performance of modules from different vendors apart is how tight they can run, how high they can clock, and of course their cost. It's the timings and clock that will give you the ability to push more megs a second to add snappiness to your desktop, and frames to your games.

If you have any suggestions for a Head 2 Head you'd like to see, send them in!

Smart Choice!

Prepare for the future today!



GIGABYTE i-DNA Series Motherboard

GA-8I955X Royal

100
BEST PRODUCTS
OF 2005



- Intel® 955X Express Chipset + ICH 7R
- Optimized for Intel® Pentium® Processor Extreme Edition
- Supports dual channel DDR2 800 with ECC up to 8GB
- Features GIGABYTE exclusive U-Plus Dual Power System
- Features dual Gigabit Ethernet port connection
- Integrated new generation SATA 3Gb/s storage interface
- Features with Intel Matrix Storage Technology
- Designed for Dolby Master Studio

Free!

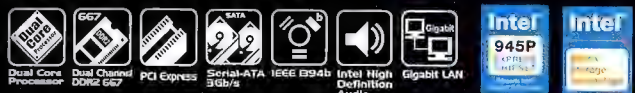
GN-BTD02 Bluetooth
USB Dongle included!!

GIGABYTE Patented
U-Plus D.P.S. included!!



GA-8I945P Pro

100
BEST PRODUCTS
OF 2005



- Intel® 945P Express Chipset + ICH 7R
- Supports Intel® Pentium® D Processor
- Features Intel® Matrix Storage Technology
- Supports new generation dual channel DDR2 667 memory architecture
- Integrated new generation SATA 3Gb/s storage interface
- Experience revolutionary graphics with the PCI-Express x16 interface
- Features T.I. IEEE 1394b and Gigabit Ethernet connections
- Features 7.1 channel Intel® High Definition Audio



For more information, please call our distributors:

Australia

N.S.W. SYNEX 02-8756-8888
RECTRON 02-9748-7725
QUEENSLAND SYNEX 07-3900-6288
PERTH SYNEX 08-9205-5788

VICTORIA SYNEX 1300-100-100
(TOLL-FREE)
RECTRON 03-9561-6166

New Zealand

Black Diamond Technology LTD 0800-439439
Checksun New Zealand LTD 64-9-579-8838
Ingram Mirco NZ LTD 64-9-574-2500

Specifications and pictures are subject to change without notice.
All brand names and products are registered trademarks of their respective companies.

Upgrade Your Life™ www.gigabyte.com.tw

GIGABYTE
TECHNOLOGY

ASUS N7800GT DUAL

Logan Booker checks out some 7800 GT dual-chip voodoo.

Price \$1499

Supplier ASUS

Website www.asus.com

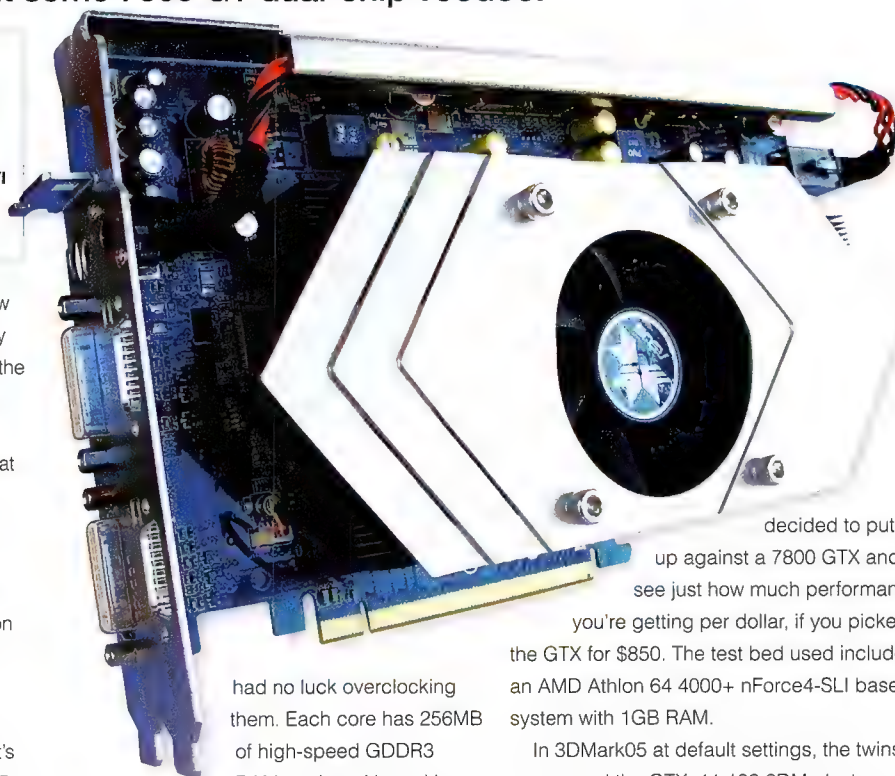
Specifications Two GeForce 7800 GT GPUs; 430MHz core; 256-bit, 1.2GHz memory; 512MB GDDR3 memory (256MB per core); 2x DVI and 2x VGA outputs; PCI Express; external power supply.

We've seen enough benchmarks to know that NVIDIA's G70 architecture is pretty hot right now, with the freshly fabricated R520 the only thing keeping ATI in contention. Although R520 has legs, they have yet to be stretched and it's the 7800 GTXs and GTs of the world that are garnering favour with hardcore gamers.

Additionally, with the lacklustre debut of Crossfire still haunting ATI (and RADEON owners) SLI remains the preferred dual-card technology among enthusiasts. Capitalising on this, and the fact us enthusiasts love having tech used in interesting and mystical ways, ASUS has put together the N7800GT DUAL, a twin-7800 GT solution on the one card. That's right – two 7800 GTs on the one quivering PCB.

And quiver it does with what appears to be a massive heatsink attached to its front. Once the top section is removed however the cooling assembly resembles a pair of much quainter anodised black aluminium blocks that aren't terrifying at all. It's a wonder these heatsinks are even there, the N7800 barely lukewarm to the touch under heavy duress.

Of course, it's better to be prepared than not, and with 40 pixel and 14 vertex shaders just waiting to be used, the N7800 will undoubtedly see a hot moment or two when in operation. The cores are clocked at 430MHz, 30MHz higher than standard, which might explain why we



had no luck overclocking them. Each core has 256MB of high-speed GDDR3

RAM to play with, making for 512MB total on the card. There are also four outputs, two DVI and two VGA, so if you feel compelled to have a quad monitor setup in the near future, this card could well be for you.

Along with the perfunctory software bundle that includes PowerDirector, Project Snowblind and oddly VirtualDrive 9, is a power adaptor that would scare small children, dogs and any sane electrician. If you want this baby to run and your system to be stable, don't even think about juicing the N7800 from your internal power supply.

The question you're asking yourself now is whether the N7800 is worth it or not. We

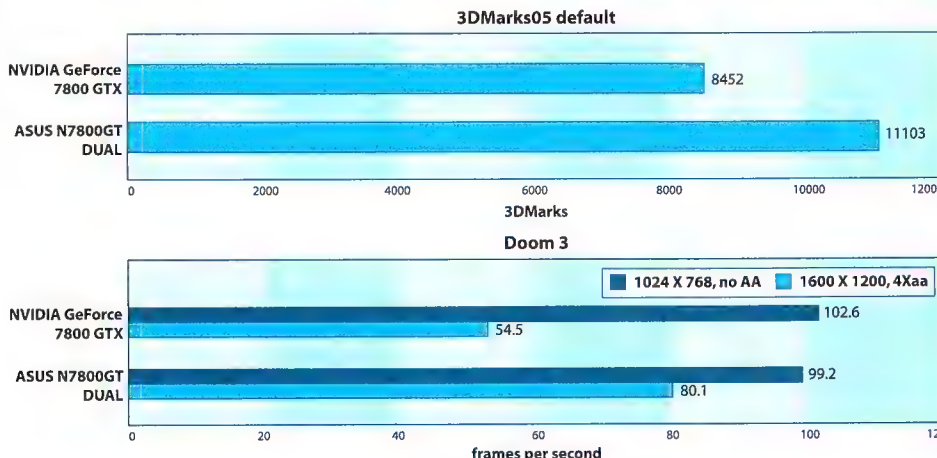
decided to put it up against a 7800 GTX and see just how much performance you're getting per dollar, if you picked up

the GTX for \$850. The test bed used included an AMD Athlon 64 4000+ nForce4-SLI based system with 1GB RAM.

In 3DMark05 at default settings, the twins massacred the GTX, 11,103 3DMarks to 8452. However, the N7800 offers 7.4 3DMarks for every dollar, while the GTX gives you 10 3DMarks per dollar. The performance difference itself was also only 24 percent.

We threw Doom 3 at it next, and the N7800GT DUAL returned a nice 80.1 frames per second at high-quality with 4x AA. The GTX managed 54.5, which is more than playable. .05 of a frame per dollar for the N7800 compares favourably to the .06 of a frame for the GTX. The low quality Doom 3 results however work against the N7800, the CPU cutting both setups short and returning nearly the same scores.

The N7800GT DUAL does indeed fire out pixels like a deranged TFT brought to life by a villainous scientist and will masterfully handle anything you can throw at it. But at almost \$1500 it's asking a lot when a 7800 GTX now does a good enough job for less, and offers more performance for your dollar. If you've only got one PCI-E slot however and want SLI performance, or you just like big, dominating cards in your PC the N7800GT Dual is well and truly made for you.



score **7.5** OUT OF 10

Gigabyte i-RAM

Ashton Mills takes a ride on the solid state super train.

Price **\$199**

Supplier **Gigabyte**

Website **www.gigabyte.com**

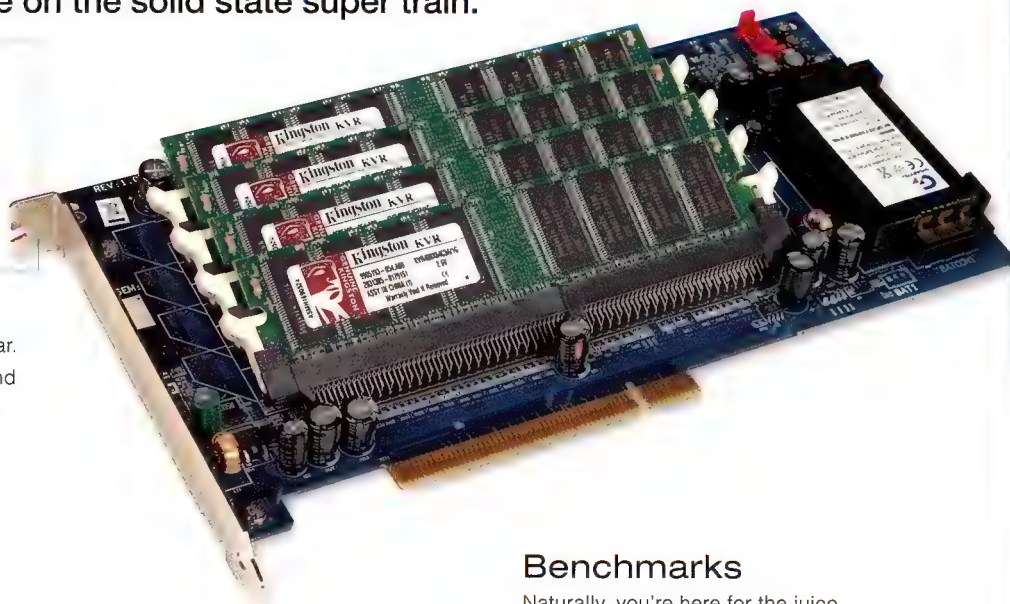
Specifications **4 x 184-pin DDR**

DIMM slots; non-ECC 200-

400MHZ DDR DIMM support;

PCI card; Li-Ion battery; SATA

150 interface; immense kudos
from your peers



We first set eyes on the i-RAM at Computex in Taipei earlier this year. It was, then, one of the most innovative and interesting releases at the show, and ever since we've been hanging out to get our hands on one.

Well, we got two.

For the uninitiated the i-RAM takes the premise of a RAM drive one step further by making it a pluggable DIY device on the cheap. By definition non-volatile RAM is expensive, and so the idea of a speedy, *affordable*, RAM drive that can retain data persistently has been a dream for some time. There are similar products on the market, but they are generally targeted at the enterprise, requiring proprietary drivers or using external power supplies. And they're super-expensive.

The i-RAM takes a different tack – its power comes from the PCI bus or, failing that, an onboard battery. And it needs no drivers – it appears to the system as, and acts just like, any other SATA hard drive. Combined with its ability to make use of standard and cheap DDR RAM the Gigabyte i-RAM is an affordable, simple to use, solid-state RAM drive that, by nature, is capable of superno speeds.

Under the hood

Stats-wise the i-RAM can support up to 4GB of through the use of four 1GB DDR sticks. While the PC is connected to power

(regardless of if the machine is actually on or not) the contents of the RAM are retained by keeping it fed from the PCI bus. If, for some reason, power is unavailable (blackout, moving your PC and so on) an onboard battery will keep the integrity of the contents for up to 16 hours.

Generally, this provides a good level of reliability but it's far from foolproof. Whatever data is stored on the drive you'll either want it to be temporary (such as using it as a scratch disk) or regularly backed up to more permanent media, like a local hard drive.

The i-RAM connects to your system through a standard SATA connector and, in turn, appears to Windows like any other SATA drive. This is all thanks to an onboard Xilinx FPGA (Field Programmable Gate Array), essentially a re-programmable IC which in this case acts as a both 64-bit memory controller and SATA controller in one to run the i-RAM and talk to the PC.

Benchmarks

Naturally, you're here for the juice.

Our testbench machine was an Athlon 64 3500+ with 1GB of DDR on a Gigabyte GA-K8NXP-SLI nForce 4 SLI-based motherboard.

Considering at Computex the de-facto demonstration of the i-RAM's capabilities was its use as a Windows boot drive, we started our tests by installing a slipstreamed Windows XP and SP2 onto one of the i-RAMs.

The motherboard's BIOS had no trouble recognising the i-RAM as a SATA drive (showing up as 'Gigabyte i-RAM v0.96'), and so did the Windows installer, happily treating it as just another hard drive.

And the results? The install itself was marginally faster, but the real mind-fsck experience was seeing it boot up for the first time... in just *four seconds*, from post BIOS initialisation to desktop. And that's just one i-RAM, we hadn't RAIDed the pair yet.

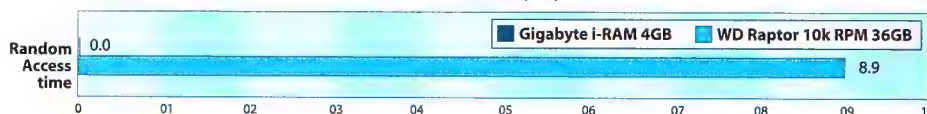
Various hoots of awe and loudly phrased self-deprecating expletives could be heard escaping the confines of Atomic Labs at this result. We had just witnessed, after all, the fastest Windows boot in Windowsdom.

Ironically, and as is the case with Windows, after installing appropriate drivers for the system (NVIDIA Forceware set, graphics drivers etc) the bootup time extended to eight seconds as Windows got cosy with its hardware.

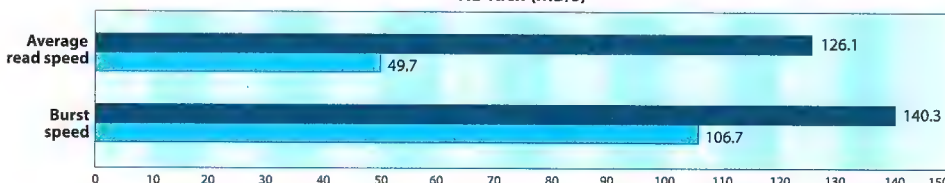
Next up we blanked the drive, booted off the hard disk, and setup one i-RAM as a data drive. For measuring throughput we used HDTach and SiSoft Sandra.

Sandra registered a maximum throughput

HDTach (ms)



HDTach (MB/s)



WARNING: These benchmark results may induce an unintended pants-tenting.

speed of 136MB/s and a sequential read speed of 137MB/s. The best part – the random read speed also maintained a speed of 137MB/s. To understand the importance of this score we'll take a look at the HDTach.

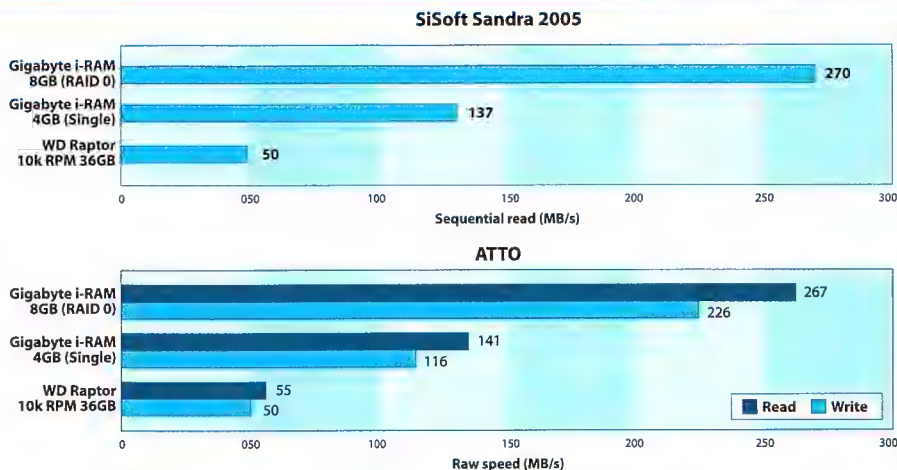
HDTach also showed a speedy 126MB/s for average read speed, but the two most important results to notice a seek time of 0ms (while obviously not zero, it's so low it's off the scale for HDTach) and the sequential read speed graph – it's completely flat. A hard drive, by comparison, shows a consistently declining read speed as the heads move to the inner platters where the effective rotation is slower. With the i-RAM, of course, the whole data space is perfect. This means regardless of whether the data to be read is sequential or randomly scattered, the i-RAM delivers a consistent throughput of 126MB/s.

Then, naturally, we setup RAID.

The i-RAMs were configured as dynamic disks and an 8GB RAID-0 software RAID array was made. Testing again with SiSoft Sandra and ATTO to focus on throughput, we witnessed the insanely fast result of some 270MB/s in Sandra, reflect in ATTO with a maximum throughput of 267MB/s. ASCII is too feeble a communication medium to express the type of smiley we'd like to print.

However all this being as it may it's important to note that the i-RAM is severely bottlenecked by the SATA interface. Protocol overheads aside, the RAM is capable of many gigs a second transfer rates but the SATA interface can only push 150MB/s at best. Even when the next generation i-RAM comes and supports SATA II at 300MB/s, it's barely touching what the RAM drive is capable of pushing.

It's also worth noting that the i-RAM is still in development, and these preview units may



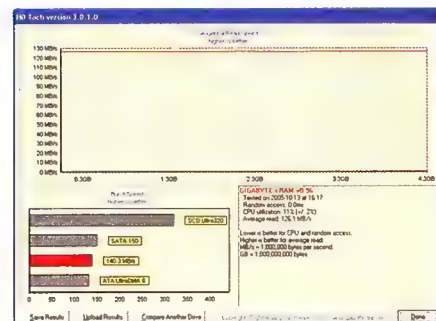
not resemble the final product. For a start, these units are fussy over the compatible memory modules it can use, and it's also rather fussy over the chipsets it likes to run on – Intel based boards are favoured at the moment (you need to be running at least the nForce 4 for AMD 6.67 drivers for the i-RAM to even show up on AMD boards) and it seems to prefer operating on SATA controllers in regular mode over RAID mode.

According to Gigabyte, all of these issues are being looked at and will be rectified as the product develops.

Conclusion

There's no denying the i-RAM is fast, innovative, and simply sexy. But is it really that useful at this stage? It could be used as a boot drive, and 4G is enough for Windows and a fair few apps, but it'd be wise to point Windows to your hard drive to store user directories. This way your desktop settings will always be preserved, even if the drive should lose its contents.

Alternatively, it could be used as a data drive, but at the current 4 gigs limit there's



TO PLAY YOUR BEST
YOU MUST
SEE THE BEST!



www.nvidia.com

Get **THE POWER OF 3** with
WinFast® PX 7800 SERIES



WinFast PX7800 GTX EXTREME



WinFast PX7800 GTX



WinFast PX7800 GT EXTREME



WinFast PX7800 GT

- ◆ Shader Model™ 3.0 technology support
- ◆ NVIDIA® SLI™ technology Ready
- ◆ High dynamic-range (HDR) rendering support



BCN Technology Pty Ltd
www.bcntech.com.au
Tel: +61-2-9648-0888
Fax: +61-2-9648-0999



Rectron Electronics Pty Ltd
www.rectron.com.au
Tel: +61-3-9561-6166
Fax: +61-3-9561-8722



ASUS P5N32-SLI Deluxe

Price **\$399**

Supplier **ASUS**

Website **www.asus.com**

Specifications **Socket 775; nForce 4 SLI x32 Intel Edition; PCI-E: 2x16 2x1 1x4; PCI: 2; dual-Gigabit LAN; Realtek 7.1 audio; Firewire.**

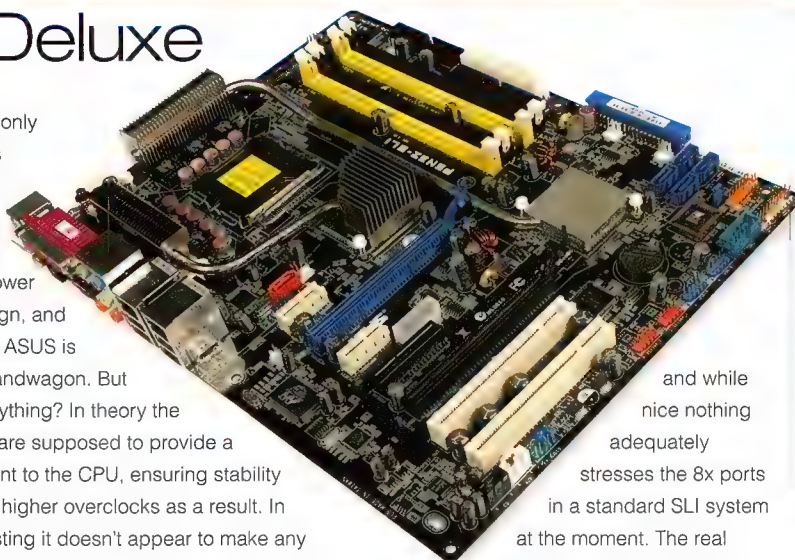
Hot damn, two heatpipe systems on the one board! From a purely pants-spanking perspective, the ASUS P5N32-SLI Deluxe oozes sex appeal in that particularly geek-festooned fashion. With a heatpipe cooling system, dual-Gigabit Ethernet, eight-phase power filtering, dual-core CPU support, and NVIDIA's new nForce 4 SLI x16 chipset there's no way this baby won't get the blood flowing to your nether region, unless you happen to be dead or de-sexed. Regardless, it's certainly an impressive lineup of the latest features on the market. Did we mention it has two heatpipe coolers?

It's not all just for show, however. NVIDIA's nForce 4 SLI x16 design is a two-chipset solution, and so it's all but necessary to use the heatpipes to cool the two chipsets. Also new is the eight phase power filtering, a natural extension over the standard three or four phase filtering most motherboards use.

Previously only Gigabyte has offered more stages with its pluggable DPS (Dual Power System) design, and now it seems ASUS is joining the bandwagon. But does it do anything? In theory the extra stages are supposed to provide a cleaner current to the CPU, ensuring stability and possibly higher overlocks as a result. In real-world testing it doesn't appear to make any noticeable difference, but it's certainly not doing any harm.

Another new feature of ASUS' latest flagship is an lone SATA port sitting with the USB, LAN, and audio outs. In previous releases, ASUS has included a PCI backplane that allows SATA data and power cables to connect and be used for an external drive hookup, but here the port is built directly into the backplane.

The dual 16x PCI-E graphics ports are the key selling point of this new flagship mobo,



and while nice nothing adequately stresses the 8x ports in a standard SLI system at the moment. The real advantage is future proofing.

The only down side to the P5N32-SLI Deluxe is its limited two PCI slots, but overall if you're looking to build an Intel platform, this is the most up-to-date and feature packed board available.

AM

score **8.5** OUT OF 10

Gigabyte GN-MD01

Price **\$89**

Supplier **Synnex**

Website **www.synnex.com.au**

Specifications **802.11b/g 54Mb/s wireless; WPA security; RJ45 LAN; one-touch configuration; Xbox and PS2 support.**

Over the last couple of years, wireless Ethernet bridges have plummeted in price faster than Anna Nicole Smith's panties in the presence of a billionaire with a heart condition. When they first hit the market you'd be lucky to walk away with enough change from \$200 for a tube of thermal paste, but these days it's possible to pick up a decent model for under \$100. The latest bargain bridge from Gigabyte checks in at a mere \$89, but after dealing with the horrible interface, we have to wonder if it's money well saved.

Aimed at the gaming audience, in particular console users, we thought we'd fire this adaptor up on our Xbox for a bit of online Forza lovin'. Unfortunately the device likes to call the static IP of 192.168.1.1 home – surely Gigabyte could have chosen an IP that was slightly less popular? It also prefers to operate without a DHCP server running, with the manual

suggesting to run it on a network using manually assigned IPs. Considering the five other devices on the test wireless network (all based off a Billion 743GE wireless router) were quite happy to run with automatically assigned IPs, we decided to set the adaptor up to handle the DHCP server. What a mistake that was. The web-browser based interface kept crashing, and several times it was necessary to power down the adaptor, before resetting it to factory defaults.

Perhaps a firmware upgrade would fix the problem, we thought. Unfortunately it didn't make a difference – as soon as we enabled the DHCP client option, the adaptor once again kept crashing. After an hour of doing the same

four or five steps over again, it finally worked – and we're still not quite sure what we did to make this happen.

And when it worked, it worked perfectly. Don't you just love the way technology is always predictable and reliable?

Once we got past the flaky interface, we couldn't fault this bridge – decent range with the expected bandwidth. But boy, what a hair puller of a journey it was to get there...

BR



score **7.0** OUT OF 10

asus p5n32-sli deluxe

gigabyte gn-md01

Leadtek 7800GTX TDH Extreme



Price \$995
Supplier BCN
Website www.bcntech.com.au
Specifications G70 core, 24 pixel pipelines, 8 vertex shaders, 256MB memory, clocked at 490MHz core, 1350 memory, heatpipe cooler

Leadtek is one of only two companies so far that seems to be innovating with the stock 7800GTX design. Though all manufacturers have been leaving the PCB as-is, ASUS threw in a dual-slot cooler based off Artic Cooling's Silencer series, and now Leadtek has done something similar. Except, for Leadtek, the cooler is actually the same reference design used on NVIDIA Quadro workstation cards.

Obviously, the design of a cooler is about more than just heat. If you can keep the GPU and memory cooler, you'll be able to reach higher clocks before instability creeps in. And this is exactly what the Leadtek demonstrates, coming clocked standard at 490/1350 (over the default 7800GTX speeds of 430/1200).

Sure enough, it handles this speed just fine, but we couldn't push it much past 500MHz for the core and the memory not at all. Compared to the original Leadtek card we reviewed in our

7800GTX roundup (see *Issue 57*) it's definitely an improvement.

Interestingly, and unlike the ASUS TOP design, the Leadtek cooler exhausts air both inside and outside the case.

Usually we'd expect this to have an impact on temps in a sealed case, but nevertheless, when we tested both cards inside a sealed case for a few hours while idle and under load, the Leadtek was consistently cooler by about six degrees. Clearly the heatpipes on the Leadtek are an advantage despite some hot air still being exhausted into the case. Even better, the whole setup is quieter than the stock 7800GTX cooler, so it's a win on all counts.

Sticking it into an Athlon64 4400+ nForce4-SLI

based system we put it through the paces with 3DMark05. As you'd expect, it returned a healthy 8435 3DMarks, showing off the benefits of a default overclocked setup.

Overall, if you haven't so far jumped on the 7800GTX bandwagon, the Leadtek Winfast 7800GTX TDH Extreme has everything you need, and then some.



score 9.5
OUT OF 10

Seagate NL35 400GB

Price \$530
Supplier Seagate
Website www.seagate.com
Specifications 400GB, 7200RPM, 16MB cache, NCQ, SATA 150, one million MTBF, 5 year warranty

Seagate's NL35 drive is, like Western Digital's WD4000YR RE2 reviewed last issue, targeted directly at the 'nearline' market for storage space and reliability. Seagate defines this as 24/7 operation at a low duty cycle – i.e. not continuously servicing requests but still constantly powered up. This reliability isn't just ideal for enterprise environments, but home and small business filesevers as well.

While the NL35 sports an impressive list of features, in truth it appears to be a re-tooled Barracuda 7200.8 drive, only engineered (specifically with the firmware) for the near-line segment. As with the WD4000YR, these drives often attract hardcore PC users for their speed and/or reliability.

And the NL35 certainly puts dibs on both. Featuring a SATA 150 interface, NCQ, a 16MB cache, and the standard 7200RPM spindle speed the NL35 returned a meaty 59MB/s

in SiSoft Sandra, actually faster than the Barracuda 7200.8.

One of the new features of the NL35 is its ability to monitor its temperature and adjust its speed to maintain maximum throughput – if drives get too hot errors are more likely to occur. Rather than cause a backlog or dropped requests from the system, the NL35 will slow itself down but continue to operate reliably until the temperature drops, whereby it will return to its original speed.

Sporting 400GB of storage goodness it's not bad value for the price, but not quite as competitive as Western Digital's offering. It is, to be sure, a beautifully quiet drive however

and thus a firm contender for anyone building a silent PC who shares as much a passion for copious amounts of storage space as they do for silence.

Still, for a real price/performance contender we're holding out for Seagate's new Barracuda 7200.9, a review for which we'll have for you in the next issue.



score 8.0
OUT OF 10



DOUBLE YOUR BANG WITH THE CROSSFIRE !

AVAILABLE NOW



LANDART UT RDX200 CF-DR



Australia IT
Tel: 130 668 715 (VIC & NSW only)
<http://www.australiat.com.au>



BroNet
Tel: (02) 8799 3888
<http://www.bronet.com.au>



Multi Technology Distribution
Tel: (03) 8346 1602



Microsoft
Visual Studio
Express Editions

atomic
LIVE2005



Announcing the official Australian launch event for Microsoft's Visual Express product line!

Featuring a Q&A with Dan Fernandez, Visual C# Product Manager in the Developer Division, United States. Dan has been a core part of the team that brings the Visual Express product line to market. Whether you're a developer, a student or are just curious about software development, this session is a must!

To try out the "free to download" development tool, go to:
<http://lab.msdn.microsoft.com/express/>

Make sure you register at www.atomicmpc.com.au/atomiclive to be there for the opening event on the Atomic Stage at 11:00!

Watch for more Visual Express announcements at www.atomicmpc.com.au

More about Dan: Dan has been with Microsoft since July 2001, previously working as a Developer Evangelist in the Mid-Atlantic district. Prior to joining Microsoft, he worked as a developer at several consulting firms including IBM Global Services specializing in web-based and mobile application development. Visit Dan's blog <http://blogs.msdn.com/danielfe>

D-Link DGL-4300

Price **\$349.95**

Supplier **D-Link**

Website **www.dlink.com.au**

Specifications **1 x WAN port; 4 x Gigabit LAN ports; 802.11b/g 108MB/s support; SPI firewall; GameFuel technology.**

The catchcry for the DGL-4300 from D-Link is 'Lag is no longer an excuse'. What makes the DGL-4300 so special? Classed as a 'gaming router' with its GameFuel technology the DGL-4300 essentially incorporates packet filtering that puts priority on UDP and TCP-based gaming packets. It's a simple idea, something you can setup yourself if you run a Linux gateway, but it's good to see it make it into an off-the-shelf product.

Note, however, that unless your link is constantly saturated using VoIP or P2P software, or you're sharing your connection with your extended family, it won't make much of a difference. The whole point of prioritising traffic means putting your gaming packets above those of others on the link – but if there are no other transactions going on, then your games have all the bandwidth to themselves anyway. It's definitely a nice feature, but don't buy it for

this alone.

In fact the real selling point of the DGL-4300 is that it integrates a number of high-end technologies neatly into the one box. Not only does it support 802.11b and 802.11g wireless, it also handles the turbo-fuelled 108Mb/s 802.11g variant and, best of all, bundles this in with a four-port Gigabit Ethernet hub. So no matter whether your network is wired, wireless, or both you can transfer between machines at maximum speed.

Naturally, the DGL-4300 will also accept your broadband connection and both share and

firewall it for your network. An excellent browser based interface allows you to configure the firewall, wireless security with WEP and WPA, and even add your own profiles to the already extensive list of pre-defined games to give priority to for traffic.

Overall the DLGL-4300 is a nicely packaged broadband router for the modern geek and gaming home.

AM

8.5
OUT OF 10



Microsoft Laser 6000

Price **\$69.95**

Supplier **Microsoft**

Website **www.microsoft.com.au**

Specifications **X-Y resolution 1000dpi; imaging rate 6000fps; tracking speed 508mm per second; corder; laser sensor.**

In its latest attempt to ingratiate itself with the hip gaming crowd, Microsoft has taken on the specialist gaming mouse market. Sure, the name of this pointy thing sounds like a cheesy 1970's sci-fi flick, but how does she handle when cupped in the sweaty palms of a frenzied shooter fan?

As you might have guessed from its name, this mouse uses a laser sensor – in fact it's Microsoft's first laserific mouse. It's got a tasty resolution of 1000dpi that is soaked up at 6000 frames per second; not quite up there with the best that Logitech has to offer, but still very accurate for twitch-happy gamers. It's not the most comfortable creation around, but the fact that it's ambidextrous means that lefties will finally be able to use a high-res mouse. It's also light enough for even the most exercise-deprived weakling to move; in fact it's a little too light. If you're looking for a wireless mouse, look

elsewhere, but at least the cable is very thin, giving it the feeling that it's almost wireless.

Gamers love clicky scroll wheels, as it makes weapon/zoom selection much simpler, and the Laser's fits the bill well – not too sticky, not too smooth, just right. Alas the button positioning isn't quite as ergonomic as we've seen in competitors, probably due to its ambidextrous nature, resulting in more than a few accidental dolphin dives in BF2.

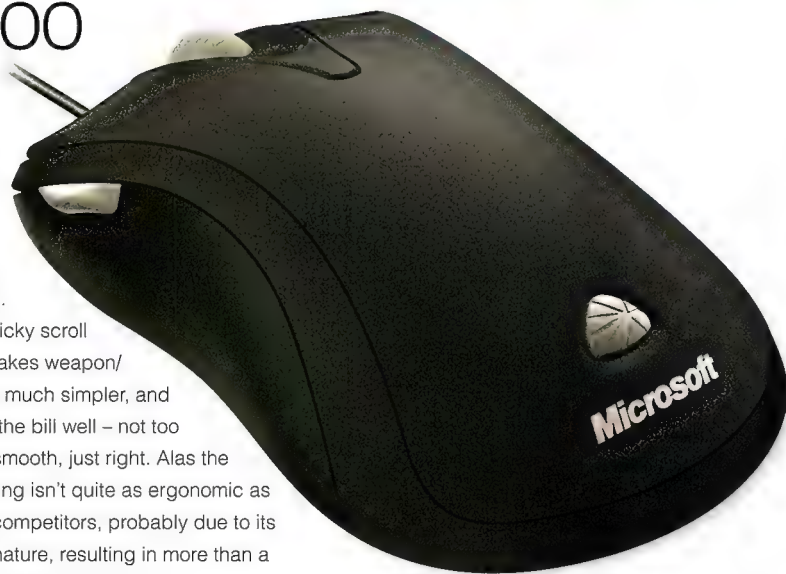
The software that powers the Laser is nowhere near as detailed or configurable as other gaming mice. About all you'll pay attention to is the ability to switch between full sensitivity and a pre-configured sensitivity of between 10% and 90%, depending on what you prefer.

When used in gaming, the Laser 6000 proved to be very accurate, but the worrying ergonomics mean that even though it's relatively

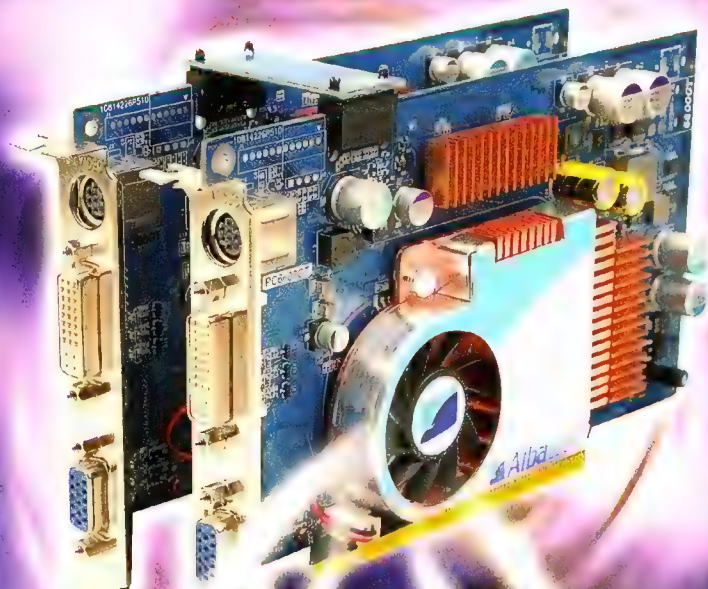
cheap compared to other gaming mice, we'd still recommend you spend a little extra and splash out on the Logitech G5.

BR

7.5
OUT OF 10



AFFORDABLE DUAL-GRAPHICS COMBO



PC6600GT



K8SLI (DDR1)



PX915-2V (DDR2)



7800GT
"Labs Winner"
PC Authority
Nov. 2005, Australia



7800GT
"Top Buy"
PC User
Oct. 2005, Australia



7800GT
"Recommended"
PC Authority
Oct. 2005, Australia



7800GTX
"Power Award"
PC Power Play
Sep. 2005, Australia



7800GTX
"Recommended"
OCNZ
Aug. 2005, New Zealand



AMI Brisbane
TEL: 07 3808-9255
sales@ami-computers.com

AMI Sydney
TEL: 07-9763-2122
nsw@ami-computers.com
AMI Melbourne
vic@ami-computers.com



DOVE ELECTRONICS
Christchurch, New Zealand
TEL: 03 338-4722
PAX: 03 338-5584
www.dove.co.nz



Albatron
www.albatron.com.tw

MGE Magnum 500W

Price \$TBA
Supplier MGE
Website www.mgecompany.com
Specifications **Rated 500W;**
modular shielded cables; short
circuit and thermal overload
protection; silent heatpipe cooling

If looks could cool the Magnum would be top dog of the silent PSU market. Its sleek brushed aluminium frame, copper heatpipe cooling, and rear backlit LCD display make it one sexy PSU. And true to its design, it's quiet.

Rated for 500W it also features detachable cables, a boon when it comes to keeping the innards of your PC clean with good airflow.

In terms of power, the Manum sports two 12V rails both rated at 15 amps, with 30 amps on the 5V rail and 25 amps on the 3.3V rail. In testing on an Athlon64 3200 nForce4-SLI 7800GTX based system all the rails were rock solid, even under load, which means it'll handle overclocking well.

This is also when the rear backlit LCD display comes in handy, displaying the temp of the unit, the draw on the main 12V rail, and the total wattage being consumed by the PSU. If you've ever wondered how much your system really draws, the Magnum will be able to tell you. Here's



hoping the next version will feature the LCD in a breakout box for a 5.25in bay where it's easier to see.

In addition to the LCD the front of the unit features a row of LEDs to indicate which rails are in use. Behind these a single low-speed temp controlled fan draws air into the unit, but even under load we could never hear this operating.

While the Magnum is clearly a sexy piece of bling for the Ali G in you, it's not all sweetness and light. Hooking up a 2nd 7800 GTX for some SLI gaming goodness, the Magnum started audibly generating coil whine under the load. It wasn't a quiet sound either, more the sound a cat might make while sliding down a razor blade. There aren't many 'silent' PSUs that can handle

an SLI system, and unfortunately the Magnum is one of them.

Overall, a solid and sexy PSU for a single GPU system. We don't usually review products that aren't available locally, but we made an exception for the Magnum because, lets face it, it's bling in a box.



Dell 5100P projector

Price \$4999
Supplier Dell
Website www.dell.com.au
Specifications **3300 ANSI lumens;**
2500:1 Contrast; 1400 x 1050 4:3
1.0" DLP chip with 2x, 4-segment
color wheel.

Aimed first and foremost at the business user, this projector is remarkable due to the fact that it's almost perfect for the home user as well. When we get to the feature list you'll start to get excited, but it's the excellent price that makes this a stand out projector.

When your screen is bigger than J Allard's ego, resolution becomes very important. With a native resolution of 1400 x 1050, the 5100P has more than enough pixels to go around. Even when the screen was stretched to approximately 2.5 meters across, the 'screendoor' effect, or pixilation, still wasn't visible from a viewing distance of 2 meters. This makes it the perfect projector for PC gaming, and it's also great for watching HDTV, although it'd be even better if it was natively 16:9.

The contrast ratio of 2500:1, combined with a brightness of 3300 lumens, give the projected image a vibrant and rich colour palette, and it's not afraid to share your room with more than a little



ambient light. Blacks were represented wonderfully, with little muddying. Considering these outstanding specifications, it's amazing that Dell has managed to squeeze it all into a chassis that weighs less than 5kg, and the fan is comfortably quiet.

The full complement of expected inputs are present, including HDMI, D1, component and S-Video. We couldn't have asked for a simpler interface, and the included remote doubles as a mouse and laser pointer. It's possible to connect the projector to your network via the RJ-45 port, so multiple PCs can all output over the network.

If there's one thing that holds this back from being the perfect all purpose workhorse projector, it's the lack of a short throw lens, as well as lens shift. You'll need to place the projector around

4 meters away from the screen to project a 100" diagonal image, and it's very picky about being lined up perfectly. Those who are susceptible to the rainbow effect might notice it a little here, as it is a DLP projector, although the 2x, 4-segment colour wheel really helps to minimise this problem.

Thankfully these are only minor quibbles, and what's most outstanding about this product is the price tag. At a touch under \$5,000, it packs a lot of punch for a remarkably affordable cost. Highly recommended if you're looking for an extremely bright, high resolution projector.



GeIL

www.geilusa.com

Ultra X

CAS 2 5-2-2

GeIL Ultra X Series Memory
Improve Ultimate Gaming Performance
Available in DDR 400 and DDR 550
Dual Channel Kits

Giving you the gaming edge

Premium Retailers

NSW

Aus PCMarket
www.auspcmarket.com.au 02-9746 0900
Capitol Computer
www.capitolcomputer.com.au 02-9281 8890
Computer World
www.cworld.com.au 02-9763 1055
Friction Networks
www.friction.com.au 02-9898 3055
Infocom
www.infocom.com.au 02-9279 4272
J&W Computers
www.jw.com.au 02-9726 2818
Plus Corporation
www.pluscorp.com.au 02-9898 3600
SecretNet
www.secret.com.au
Direct Memory Access
www.dma.net.au 08-9204 7000

WA

QLD

Computer Alliance
www.computeralliance.com.au 07-3420 3200
iMart Online
www.imart.com.au 07-3396 3928
Game Dude
www.gamedude.com.au 07-3387 1500
Pro Computers
www.procomputers.com.au 07-5443 1700
Computer Hotline
www.computerhotline.com.au 07-3800 0795
Custom Computer Services
www.ccsqld.com 07-5493 8277

VIC

Scorpion Technology
www.scorpnet.com.au 03-9561 8088
Computer World
IT Warehouse
CPL
www.cpl.net.au 03-8542 8688
Landmark Computers
www.itwarehouse.com.au 03-9600 2244

GeIL Artwork Competition

December 2005 Winner

Benjamin Smith - Morningside QLD

All artist enquiries should be
forwarded to AMI for redirection

AMI Technologies (Aust) Pty Ltd
Australian Sole Distributor
Dealer Enquiries 02 9763 2122

www.amitech.com.au



Got gear? Use our kitlog matrix to find the best upgrades for your needs.

There's nothing sexier than new kit. And if you're in the market to buy, you don't want to waste your hard earned cash. Let Atomic advise

you, with our new section for recommended kit! All of these products have been reviewed in Atomic. To make it easy we've created a matrix of

categories for you to cross reference, so if you're buying for yourself (*Extreme*) or your mumsie (*Budget*), you know where to spend your cash.

CPUs

Coolers

Motherboards

Video cards

BUDGET



AMD Athlon 3200+

RRP \$290

It's been around for some time, yet still remains one of the top performers for the money. Well worth a 'budget' look.

Reviewed in Issue 53 – Page 70



Thermaltake Golden Orb II

RRP \$49

For such a large and effective heatsink the price is hard to beat. It's low profile too, so should fit in all sorts of cases.

Reviewed in Issue 58 – Page 33

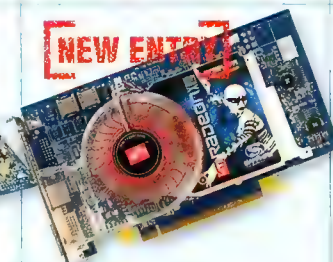


Gigabyte GA-K8VT890-9

RRP \$139

Sporting VIA's K8T890 chipset, this Socket 939 board is perfect for the low budget while still packing a powerful punch.

Reviewed in Issue 54 – Page 55



Sapphire X800GTO Fireblade

RRP \$TBA

The Sapphire X800GTO RADEON Fireblade is a power packed performance beastie.

Reviewed in Issue 59 – Page 35

PERFORMANCE

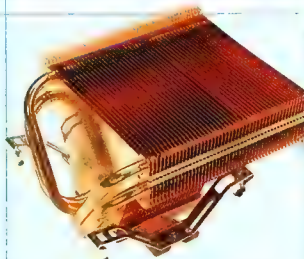


AMD Athlon 64 X2 4800+

RRP \$1400

Not quite as fast as an FX single core, but the 4800+ has two CPUs for your multitaskin' lovin', for the ultimate in gaming + desktop use.

Reviewed in Issue 58 – Page 35

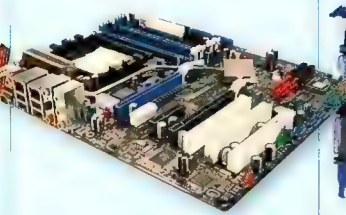


Thermalright XP-90C

RRP \$99

Thermalright built their business around effective coolers, and the XP-90C is one of the best money can buy. It looks secks too!

Reviewed in Issue 58 – Page 33



ASUS A8N-SLI Premium

RRP \$320

If stability and performance are important, the A8N-SLI Premium is simply one of the best boards moolah can buy.

Reviewed in Issue 56 – Page 41



ASUS N7800GT DUAL

RRP \$1499

Yegads this card is *massive*, and so is its perfoamcne. You may now repeatedly spank the monkey.

Reviewed in Issue 59 – Page 41

EXTREME



Intel Pentium 4 3.73GHz Extreme Ed

RRP \$1590

When raw MHZ and boasting rights count, the P4 3.73 GHz EE is your man – er, processor.

Reviewed in Issue 54 – Page 54

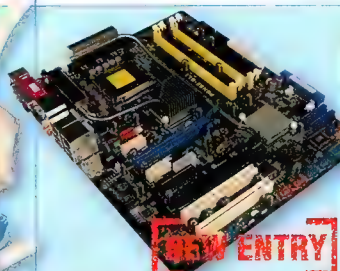


Gigabyte Water Cooling Kit

RRP \$189

This is the coolest cooling kit to ever cool anything, anywhere, anytime. It's that damned cool.

Reviewed in Issue 56 – Page 46



ASUS P5N32-SLI DELUXE

RRP \$399

It does'n't get better than NVIDIA's new SLI x16 platform and dual-heat-pipe cooling for the Pentium.

Reviewed in Issue 59 – Page 45



Leadtek 7800 GTX TDH EXTREME SLI

RRP \$995

There's so much beef in two of these you could open your own market selling, like, beef. Or noodles. Yum.

Reviewed in Issue 59 – Page 46

www.techbuy.com.au
proud to stock the best of kitlog

TechBuy
www.techbuy.com.au

Hard drives



Maxtor MaxLine III 300GB

RRP \$259

These 300GB drives are fast and sweet, and yet the price is just right, nigh on a dollar per GB.

Reviewed in Issue 57 – Page 31

Monitors



BenQ FP71V+

RRP \$599

This 5ms 17in LCD is cheap and speedy, and plenty good enough for even the most fussy of grandmas. Send her your love today!

Reviewed in Issue 54 – Page 48

Speakers



KOSS SB40

RRP \$129

You'll find that these circumaural boomers will do you justice just fine if you can't afford a THX 7.1 platinum plated surround sound setup.

Reviewed in Issue 38 – Page 30

Cases

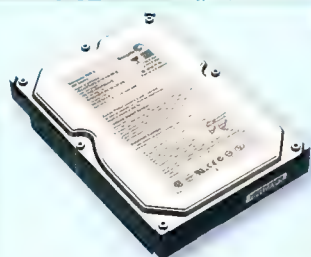


Extreme Gamer Viper gaming case

RRP \$179

This snakey, stylish box has a great price point and packs a 500W PSU to boot. Wonderful.

Reviewed in Issue 53 – Page 27



Seagate Barracuda 7200.8

RRP \$539

With another 400GB to spare – and speedy at that – you'll be laughing your panties right off.

Reviewed in Issue 53 – Page 62



ViewSonic VX924

RRP \$899

This 19in monitor screams along at 4ms and is our monitor of choice. Fantastic image quality, features and speed. Winner.

Reviewed in Issue 54 – Page 48



Altec Lansing MX5021

RRP \$349

This 2.1 set is for those after a decent yet simple setup. The best 2.1 speaker set money can buy, and the next best thing before 5.1.

Reviewed in Issue 47 – Page 85



Antec P180

RRP \$265

For functionality, style, and silence you can't go past Antec's sleek P180. With some of coolest features to ever debut in a case, the P180 is the shiz.

Reviewed in Issue 56 – Page 39



Western Digital Raptor WD740GD

RRP \$285

It may be small for the size but it's the fastest SATA drive money can buy. RAID two and you're sitting pretty!

Reviewed in Issue 57 – Page 31

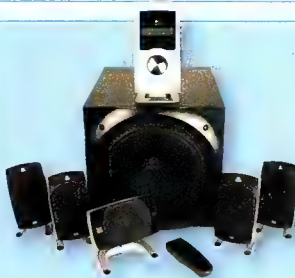


BenQ FP231W

RRP \$2799

If you want big, you can't go past 23 inches of big. And wide-screen LCD big at that. Permission to spooge pants granted, soldier.

Reviewed in Issue 55 – Page 52

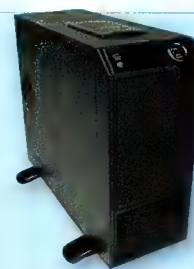


Logitech Z-5500 Digital

RRP \$749

Able to play the 'liquid gold' sound that is DTS 96KHz/24-bit, this 5.1 beast can wreck both home and hearing alike with equal impunity.

Reviewed in Issue 48 – Page 56



Nextherm ICS 8200

RRP \$470

Packing a peltier with an LCD temperature readout, you can't go past a case this cool (literally) and not want to kiss it all over. Yum!

Reviewed in Issue 54 – Page 50

SUBSCRIBE
FOR A CHANCE TO WIN
ONE OF 10 DSII PACKS!!



Subscribe online@
www.atomicmpc.com.au/subscribe.asp




***Deal ends 06/12/2005**

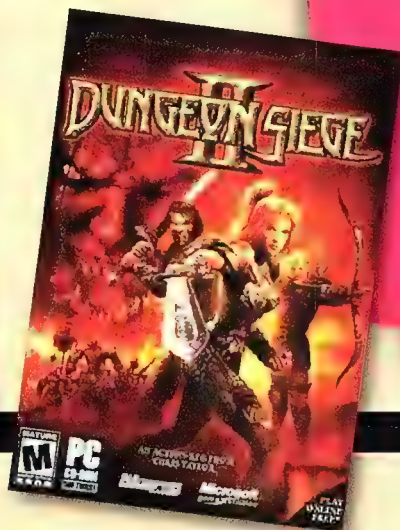
SUBSCRIBE AND GET THE MAG

-  **Delivered to your door!**
-  **THE BEST tech in the galaxy**
-  **SAVINGS! Up to 48%**
-  **FULL MONEY BACK GUARANTEE**
*see site for details



SUBSCRIBE AND WIN

-  **A copy of Dungeon Siege II**
-  **A limited edition jacket signed by Gas Powered Games**
-  **A copy of the Collectors Edition comic**



AUSTRALIA

- 1 year (12 issues) – \$66.50 – SAVE 30% off the newsstand price**
- 2 years (24 issues) – \$99.00 – SAVE 48% off the newsstand price**
- 6 month - \$31.00 – SAVE 35% off the newsstand price**

NEW ZEALAND

- 1 year (12 issues) – NZ\$75.00 – SAVE 30% off the newsstand price**
- 2 year (24 issues) – NZ\$115.00 – SAVE 46% off the newsstand price**



ATI has responded exceptionally with the X1000 series, based on a new architecture that the vendor believes will prepare it for the future demands of games – and beyond

the radeon revolution

Expected in June this year and not arriving until mid-October, the R520 hasn't had the greatest of starts in the competitive industry of performance graphics hardware. With Crossfire playing catch-up with NVIDIA's SLI (see *Atomic Issue 58*), ATI has had to dig deep with its next generation GPU to make up for its lack of presence until now.

Of course, ATI has responded exceptionally with the X1000 series, based on a new architecture that the vendor believes will prepare it for the future demands of games – and beyond. With an R520-based GPU in Microsoft's high-powered next generation console, the Xbox 360, this comes as no surprise.

Multi-threading and pixel shaders

There are a number of key developments that have made the architecture not only a success today against NVIDIA's G70, but future-proofed for tomorrow's line-up of pixel-shader heavy titles.

Perhaps the most significant – apart from full support for Shader Model 3.0 – is a component ATI calls the 'Ultra-Threading Dispatch Processor' (UTDP). This fancy name hides what is essentially an advanced tasking/virtualisation engine. As prepared pixel data comes in from the setup engine it is fed into the UTDP, which breaks the data up into smaller pixel

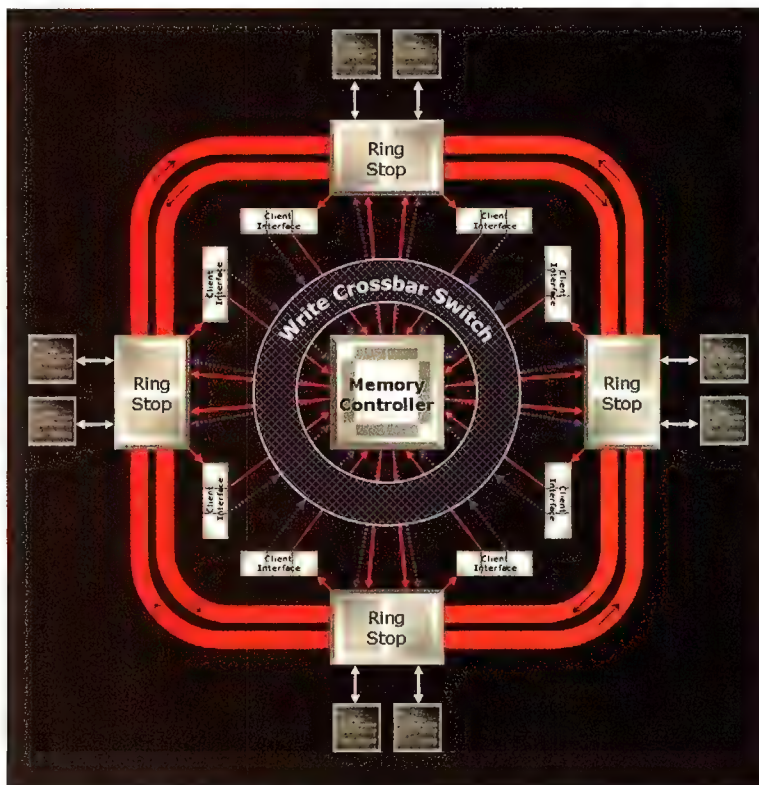
blocks and then delegates that information into the 'quad' pixel shader units. If one unit is being underutilised, the UTDP can put those resources to work, improving the overall efficiency of the pixel shader units. Although the UTDP won't be as much use in the X1300 with only the one pixel shader unit, it will make a difference in the three-unit X1600 and four-unit X1800.

Although the number of pixel shader units varies, the power of each does not. Inside you'll find four pixel processors and four texture units (hence the 'quad'), each capable of applying shader instructions to one 2 x 2 pixel area.

The R520's pixel processors also contain double the Arithmetic Logic Units (ALUs) of the R420, and now include two 32-bit scalar ALUs and two 128-bit vector ALUs. ATI has also upped the colour precision to 32-bits per channel, up from 24-bit.

Easily accessible general purpose registers are connected to each quad pixel processor, allowing the GPU to store data on the fly and switch between multiple threads. While the X1300 and X1600 can handle 128 such threads, the X1800 can deal with a massive 512.

The end result is a more flexible pixel pipeline over that of previous generations. While in part required by the SM 3.0 spec, it also makes the R520 a chip geared toward pixel shader performance rather than fill rate.



The Ring Bus

Current crossbar memory architectures will soon be insufficient for high-speed GDDR3 and GDDR4 memory. As RAM gets faster, the hardware reading and writing to that memory must be able to handle the workload.

In keeping with the future-proof design, ATI has created a new memory controller for the R520 series dubbed the 'Ring Bus'. This Ring Bus will feature in the X1800 and X1600, while the X1300 will rely on a conventional 128-bit (4 x 32-bit) crossbar controller.

The other reason for the redesign was to better distribute the memory controller silicon across the GPU, improving its efficiency, reducing the complexity of the

interconnecting wires and subsequently the heat output of the chip. Once you understand how the controller works, it makes a lot of sense.

Firstly, the Ring Bus is made up of two 256-bit (for 512-bits of internal bandwidth) lanes that connect four stop points together. At each point, data can leave and enter the bus to travel to different parts of the chip, including onboard memory. All this is delegated by the central memory controller, situated between the four ring stops and most of the on-chip components.

External bandwidth will remain at 256-bits, however, unlike previous ATI cards that have four 64-bit channels the R520 will have this bandwidth divided into eight 32-bit channels.

These values are for the X1800 only – the X1600 will feature halved bandwidths; 256-bits internal and 128-bits external.

The spread-out nature of the controller also means ATI has a lot more overhead in which to ramp up core and memory speeds, paving the way for faster models in the future without the need for more serious changes to the architecture. ATI has also said that the memory algorithm is driver-based so the company can make both general and program-specific optimisations to the memory subsystem with a simple software update.

The last upgrade from previous generations is to the onboard caches, which are now fully associative. These include the Z buffer and stencil caches along with the normal texture cache. For more information on caches in general, check out the last issue of *Atomic* (Issue 58).

Against the G70

It goes without saying that the X1000 range will compete directly with NVIDIA's 7000 series. Although they perform at a similar level, the R520 has stronger shader performance while NVIDIA's solution favours raw fill rate. The favouritism however is only minor, and both NVIDIA and ATI's products are capable pieces of hardware for any graphics task.

The architectural differences however are much more significant. The G70 is based on an 110nm process, the

OLD VERSUS NEW

GPU	X800 XT	6800 Ultra	X1800 XT	7800 GTX
Chip architecture	R420	NV40	R520	G70
Process	110nm	110nm	90nm	110nm
Die size	281mm ²	287mm ²	288mm ²	334mm ²
Transistors (millions)	~160	~222	~321	~300
Vertex shaders	6	8	8	8
Pixel shaders	16	16	16	24
Texture units	16	16	16	24
Colour precision	24-bit RGBA	32-bit RGBA	32-bit RGBA	32-bit RGBA
Core clock	500MHz	400MHz	625MHz	430MHz
RAM clock	1000MHz	1100MHz	1500MHz	1200MHz
Pixel fill rate	8000m p/s	6400m p/s	10000m p/s	7000m p/s
Memory architecture	Crossbar	Crossbar	Ring Bus	Crossbar
Memory bandwidth	256-bit	256-bit	512-bit/256-bit	256-bit
Memory channels	4x64-bit	4x64-bit	2x256-bit/8x32-bit	4x64-bit
RAM types supported	Up to GDDR3	Up to GDDR3	Up to GDDR4	Up to GDDR3
Shader Models	< 2.0b	< 3.0	< 3.0	< 3.0

G70 die measuring 334mm² while ATI has embraced a 90nm process resulting in a 288mm² die for the R520. You'd be right in thinking that the smaller process and size of the R520 would result in lower power consumption and heat generation however, the opposite is actually true due to the much higher clock and memory speeds. While the stock speeds for the GeForce 7800 GTX are 430MHz core/1200MHz RAM, the RADEON X1800 cooks at 625MHz core/1500MHz RAM.

The G70 makes up for the clock speed deficiency with its shader and texture unit counts. Although both sport 8 vertex shaders, the 7800 GTX has 24 pixel shaders and texture units while the X1800 manages with 16 of each.

The X1600 and X1300 are much less inviting, both have only a quarter of the texture units and the X1300 has just 4 vertex and pixel shaders. This still puts the budget card ahead of the GeForce 6200, it's just a shame the 6200 is an older generation chip or else this might mean a lot more.

The only other major differences are the memory architecture and the UTD. As explained previously, the R520 uses a new Ring Bus design that is more efficient and can handle faster memory speeds than the traditional crossbar in the G70. The multi-threading capabilities of the R520's UTD further improve on this efficiency by maximising the use of available pixel shader cores.

General purpose GPUs

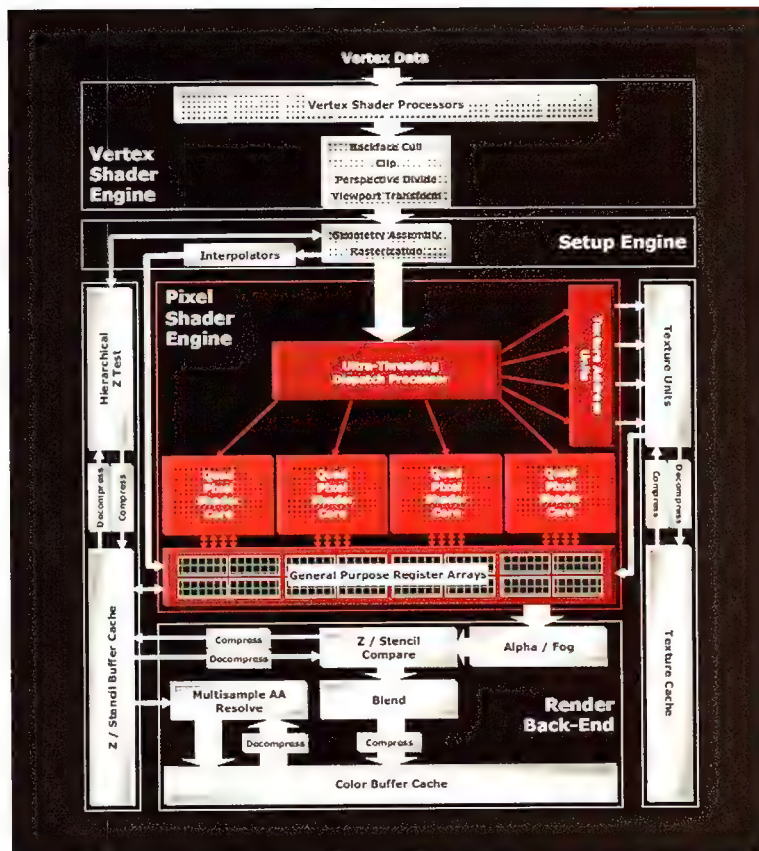
The last highlight of the R520 design is its potential for use as a general purpose processor. GPUs by their very nature are built to handle large quantities of raw data without having to think too much, making them great at applying the same shader program to many millions of pixels a second. The powerful arithmetic units, fast access to memory and high level of parallelism make them perfect for a number of non-graphics tasks.

Currently, research is ongoing at Stanford University in the US on a C-like programming language designed to create programs for the GPU that use it like a CPU. Specific tasks include protein folding; database searching/sorting and physics simulations – anything that requires large amounts of data processing with minimal CPU intervention.

Called BrookGPU, it's aimed at allowing non-GPU coders to access the GPU in a way they are familiar with. It's all part of the General Purpose GPU (GPGPU) project (www.gpgpu.org).

According to a technical PDF on GPGPU by Mike Houston, one of the researchers involved in the project (graphics.stanford.edu/~mhouston/public_talks/R520-mhouston.pdf), Brook is all about wrapping standard coding tasks to the GPU – for example, mapping memory writes to the framebuffer, letting the texture cache store streams and arrays and the programmable pixel pipelines and fragment shaders handle the actual processing. Of course, the GPU isn't perfect – the vertex and pixel shader units can't talk to each other directly, but in other ways it works a treat. A 2D array for instance can easily be mapped to a 2D texture.

Regardless of the difficulty behind certain tasks, Brook is designed to make it invisible for the non-GPU programmer.



At the moment, R520 is looking like the star architecture for Brook. The multi-threading capabilities, efficient memory controller, general purpose registers, support for the flexible Shader Model 3.0 and full 32-bit floating point precision have proven that the general purpose GPU is very much a possibility – and in a benchmark no less. Using GROMACS (www.gromacs.org), a molecular dynamics simulator, to test the relative performance between a Pentium 4 3GHz, Apple G5 2.5GHz, GeForce 78000 GTX and a RADEON X1800, the R520-based X1800 managed to beat the P4 by almost 3.5 times and the 7800 by about 1/4th. This benchmark, along with several others, can be found in the aforementioned tech PDF.

Conclusion

R520 is undoubtedly a forward-looking architecture that manages to blend the graphics requirements of today's games with those of tomorrow's. In addition, the massive performance potential of the design has opened the way for the general purpose GPUs capable of doing tasks that take conventional CPUs much longer to do.

In the short-term, this means particle engines completely GPU-driven and cloth and water physics that don't require CPU intervention. A few more years down the track and Folding@Home will be making use of your graphics chip instead of your CPU.

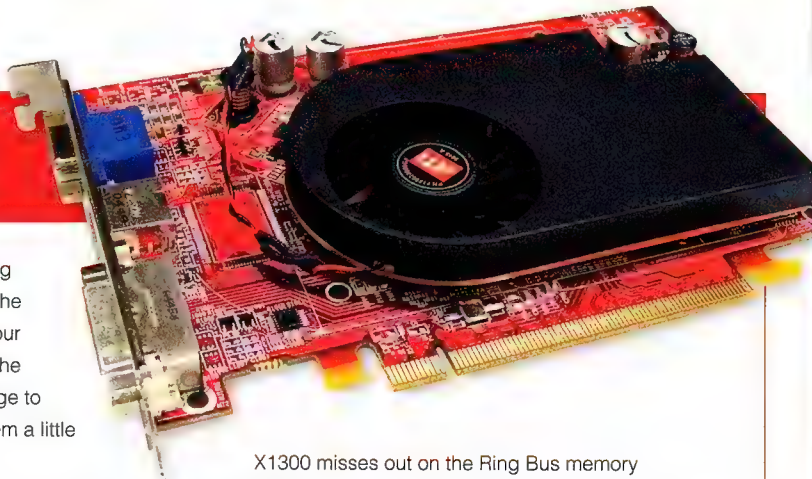
The only problem ATI has to overcome now is the speed at which it delivers to the market. The late (and half-hearted) arrival of CrossFire, and then R520, do not bode well for the company's future if this trend continues.

X1300: Runt with grunt

Even with antialiasing, anisotropic filtering and high resolutions stacked against it, the X1300 managed to stay on the radar in our benchmarks. While it didn't compare to the powerful X1800, this little chip did manage to perform near to the X1600. This may seem a little bizarre at first but was to be expected.

If you compare the architectural differences between the X1300 (R515) and X1600 (R530), you'll see that apart from clock speeds, they're very similar. ATI has lowered the raw fill rate capabilities of these cards by reducing the number of texture units and render back ends (ROPs) and compensated by improving their shader performance. While forward-looking, it will make it hard for both cards to handle current generation games, but should perform stronger as time goes on. Evidence of this can be seen in the Half-Life 2 benchmark, which has the X1300 and X1600 limping behind the X1800. With just a quarter of the texture units and ROPs the X1300 gets utterly slammed in games where shaders play a small role.

Of course, all X1000 series cards will take advantage of the 'Ultra-Threading Dispatch Processor' however the



X1300 misses out on the Ring Bus memory controller discussed earlier in this article. Unfortunately, the X1300 benefits the least from the UTDP due to the lack of resources for it to distribute tasks to and the number of threads it can handle, in this case being 128, a feature it shares with the X1600. As can be seen in the benchmarks, the two cards are close in performance – the close to double memory clock and four times the pixel shaders help the X1600 justify its higher price tag and rating, but in Far Cry and Doom 3 the X1300 was within 10 frames of the X1600.

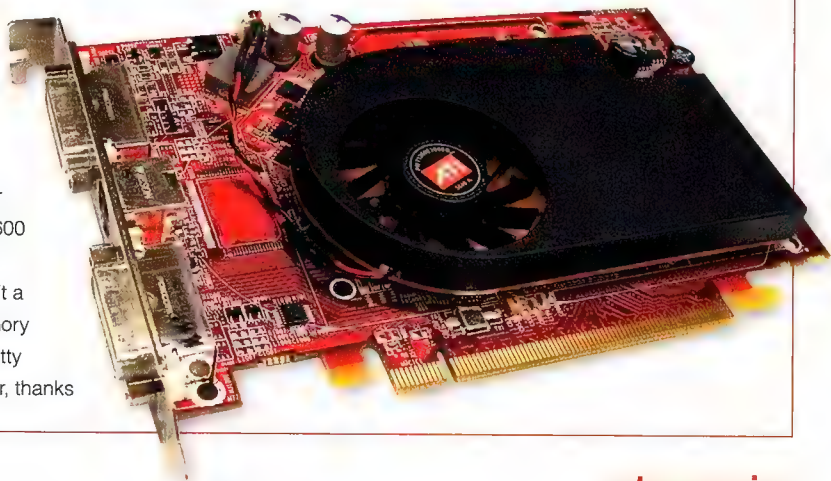
With this in mind, there's no shame in picking up an X1300 instead of an X1600. Performance wise the gap isn't wide enough to justify shelling out the extra cash for the 'better' card. Keep in mind though that the X1600 comes with the Ring Bus controller that ATI says it has yet to optimise.

X1600: Weak but willing

At the moment, the X1600 doesn't look that choice a purchase. The model we were sent by ATI is the XT version and therefore the best type of X1600 you can get, yet the difference in results between the X1600 and X1800 is nothing short of gigantic. The extra texture units and chunkier data buses really push the X1800 into the stratosphere when pixel comes to shader.

The main thing the X1600 has going for it are the 12 pixel shader processors over the four in the X1300. This should see it perform well in future games that are more reliant on applying shader programs rather than abusing raw fill rate. This is shown in the two shader-heavy benchmarks Doom 3 and 3DMark05, where the X1600 does prove itself to be 'middle-of-the-range', beating the X1300 by roughly 40-50%. With a combined 256-bit (128-bits in either direction) Ring Bus controller, the X1600 is ready and waiting for performance tweaks from ATI's engineers to make it a more efficient beast. A 1.38GHz memory clock also doesn't hurt, and we're pretty confident this could be pushed higher, thanks

to the Ring Bus controller – so don't be surprised if you see overclocked X1600 cards on the market. This advantage however is crippled by two things: the aforementioned lack of texture units and the 128-thread capable UTDP. Although there are more resources for the UTDP to make use of, it's not enough to capitalise on the memory bandwidth. Judging from the pre-production sample, we can't really recommend the X1600, even to the market it's aimed at. The best thing to do is wait it out – we'll definitely be watching the next three to six months to see how the X1600 fares against its brethren and NVIDIA.



X1800: 3D to a T

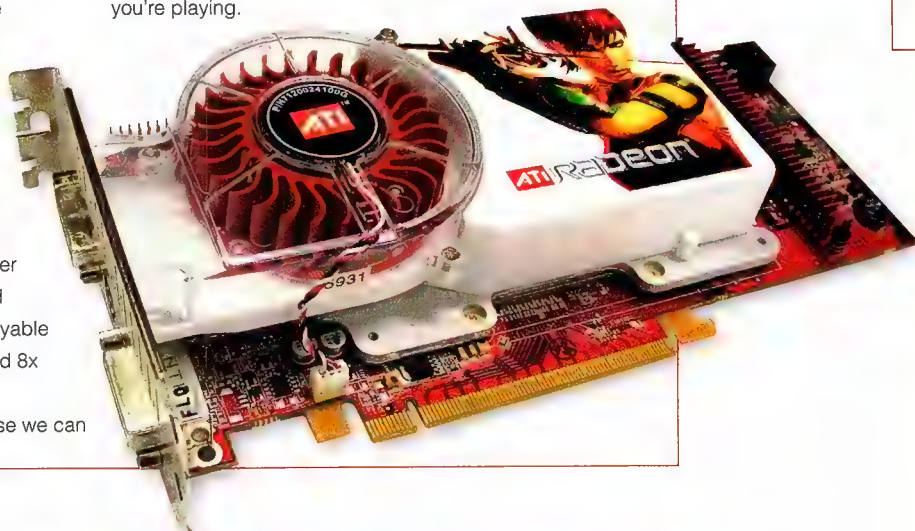
With R520 rests ATI's hopes and dreams of clobbering NVIDIA and the 7800 GTX off its well-earned pedestal. This is made obvious by a lot of things, like the new architecture, but staying inside of ATI's own X1000 series we can see how much effort has gone into making the X1800 a monstrous 3D accelerator.

The first item on the list is the 16 texture address units, four times that of both the X1600 and X1300, making the X1800 a great performer in current generation games. Coupled with 8 vertex shader processors and 16 pixel shader processors, it comes close to matching the specifications of NVIDIA's 7800 GTX wonder child. Any perceived deficiencies are blown away by the startling 1.5GHz memory clock and 625MHz core clock on the XT model, dominating all versions of the 7800. Add to this a 512-bit wide (256-bit either direction) Ring Bus controller and the X1800 looks ready to both serve and eat pixels by the millions.

Really, it's all in the numbers. The X1800 was over three times faster in Half-Life 2 than the X1600 and twice as fast in Far Cry, delivering exceedingly playable frame rates even when handling 4x antialiasing and 8x anisotropic filtering.

Perhaps the most interesting inferences are those we can

gather from the X1800 compared to the 7800 GTX. In our Direct3D-based benchmarks the X1800 beat out the 7800 GTX by 8% on average. Take into account Doom 3 however, and this drops to less than 1%. Basically, the X1800 is the better card most of the time, but games powered by the Doom 3 engine, such as Quake 4, and any game that uses OpenGL for that matter, could suffer up to a 25% performance hit. There's no doubt that ATI will continue to optimise their drivers to account for this, but it's something to keep in mind if Doom 3 and Quake 4 are the only games you're playing.



Testing roundup

ATI is effectively 'chucking an Intel' with the R520. It has created a new architecture that it can use to ramp up clock speeds to gain an advantage over NVIDIA. For the time being, it has that advantage.

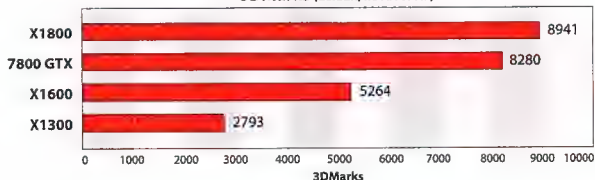
The X1000 series shows its strength when put under duress with image enhancement features like antialiasing, but still has weaker OpenGL performance compared to NVIDIA's offerings. This won't be a problem in the future considering most games these days are developing using Direct3D.

We can't really recommend the X1600. For ATI, its two big sellers will be the budget X1300 and the powerful X1800. It will be interesting to see how far ATI can push its new architecture. With the Ring Bus controller yet to be optimised and a generally intelligent design, R520 has the potential to outdo NVIDIA in the generation of games to come. We'll definitely be watching this space.

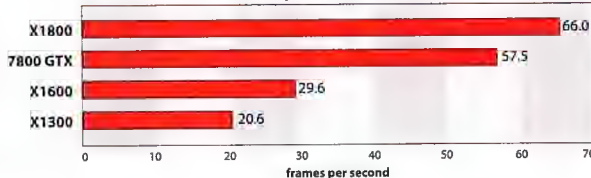
X1000 series comparison

	X1800 XT	X1600 XT	X1300 Pro
Chip architecture	R520	R530	R515
Transistors (millions)	~321	~157	~105
Vertex shaders	6	5	2
Pixel shaders	16	12	4
Texture units	16	4	4
Core clock	625MHz	590MHz	600MHz
RAM clock	1500MHz	1380MHz	800MHz
Maximum bandwidth	48GB/s	22GB/s	8GB/s
Memory architecture	Ring Bus	Ring Bus	Crossbar
Memory bandwidth	256-bit	128-bit	128-bit
Memory channels	4 x 64-bit	4 x 32-bit	4 x 32-bit

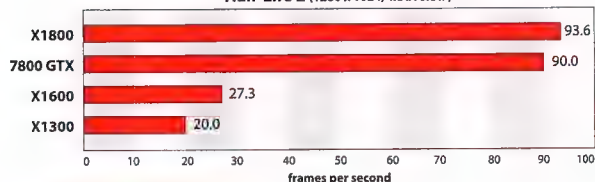
3DMarks (default, no AA or AF)



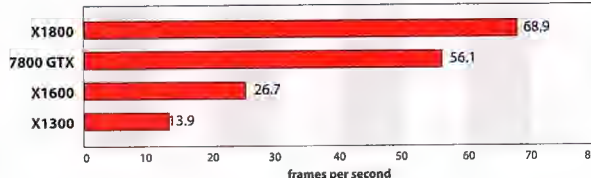
Far Cry (1280x1024, 4xAA 8xAF)



Half-Life 2 (1280 x 1024, 4xAA 8xAF)



Doom 3 (1280 x 1024, 4xAA 8xAF)

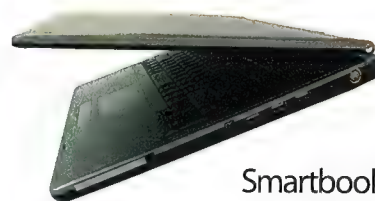


Connect without wires.

The MiTAC Smartbook series features Intel® Centrino™ mobile technology to give you the freedom and flexibility of wire-free Internet access.



Smartbook
259en



Smartbook
259ei

MiTAC 
www.mitac.com.au

Wireless connectivity and some features may require you to purchase additional software, services or external hardware. Availability of public wireless LAN access points limited. System performance measured by MobileMark® 2002. System performance, battery life, wireless performance and functionality will vary depending on your specific hardware and software configurations.

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

technique

Hands-on tutorials, tips,
and tweaking for the technically inclined.

this
month

64

technique contents



▲ Windows

The ultimate Windows system starts with the ultimate install. Craig Simms delivers the goods.

```
Radeon overclock 0.6b by Hasw (hasw@hasw.net)
Found ATI card on 01:00, device id: 0x4153
I/O base address: 0xe000
Video BIOS shadow found @ 0xc0000
Reference clock from BIOS: 27.0 MHz
lsd@clutus:~$ sudo rovclock -i
Radeon overclock 0.6b by Hasw (hasw@hasw.net)
Found ATI card on 01:00, device id: 0x4153
I/O base address: 0xe000
Video BIOS shadow found @ 0xc0000
Reference clock from BIOS: 27.0 MHz
```

▲ Linux

There's more to graphics than plug and play. You can tweak drivers too, says Leigh Dyer.



▲ Hardware

Nothing says 'I love my PC!' as a coating of fur. Yep, fur. Steven Macerak Jr shows you how.

tinytweaks

Net worth

The **net** command in the Windows Command Prompt is a rather powerful tool in the right hands – ie yours. One of the nifty things it can do is to start, stop and manage the services on your machine. To display all the currently running services, type **net start** – to stop any running, type **net stop [service name]**. You can also use this command to map or disconnect network drives (**net use**), view shares on the network (**net view**) or specific machines (**net view \\machinename**), manage shares on your own machine (**net share**) and of course to send messages to other users on the network via the infamous Windows messenger (**net send \\machinename message**). Hit up www.ss64.com/nt/net.html for the full documentation to learn how to take control of your network resources.



Hold, please

Using APT tools on Debian-based distributions like Ubuntu is a great way to keep things up-to-date, but there are times when you might not want updates for specific packages. You can put these packages on hold using dpkg. Just run **echo <packagename> hold | sudo dpkg --set-selections** and APT will skip over the specified package on upgrades. To take the package off hold, run **echo <packagename> install | sudo dpkg --set-selections**. Holding packages is especially handy when you're tracking the development branch of your distribution – if you know that a new package is broken, or you've manually downgraded a broken package to an older, working version, you can hold the upgrade and keep that version while updating the rest of your system. See? Who says apt ain't sexy!



Silent tagging

These days the pursuit of the silent box is becoming the holy grail of system building. Usually, there's a trade off between noise and performance, so building a box that is both fast *and* quiet is quite an achievement. Fans, naturally, play a big part with both airflow and obstructions generating noise – but don't overlook conducted vibrations as well. Fans, like hard drives, generate small vibrations that can be amplified by your case. The common solution is to buy silicon dampners or 'screws' to absorb vibrations of attached fans – but there's a simpler and cheaper solution: the ubiquitous zip-tag. Simply thread one through each case screw hole (thread lock outside), and use another to lock this tag to the fan. They hold fast, but are flexible enough to absorb vibrations. Win!



Xpdite, Part 1

With the Vista becoming clearer, **Craig Simms** pulls out the Windex and wipes some Windows.



Customising the Windows XP installation process has come a long way since *Atomic* first covered unattended installs. Thanks in no small part to the tireless contributors at msfn.org, while some things still require manual trickery, the unattended install no longer consists exclusively of crazily long scripts and scary formatting, but is now mostly in purdy GUI form. So let's take a gander at the new hotness that's streamlining the old and busted. Our goal: to create a single XP disc that includes all the available updates, tweaks and joy, and installs them without you having to lift a finger.

Nurse! Gloves!

First things first – preparation. Make sure you have Windows XP Pro already installed with the .NET 1.1 framework or higher, and at least

a couple of GB space free. Have your original XP install disc on hand, and a copy of Service Pack 2 downloaded (network install, not online). We want to make sure XP is as patched up as possible from its first install, so we'll also want to grab the latest updates – but instead of going to Windows Update, painstakingly wading through a sea of patches and downloading manually, point your browser towards ryanvm.msfn.org and download a handy, new lemon-scented, pre-prepared update pack. While you're there, you may also want to grab some of the switchless installers that Ryan VanderMeulen so kindly provides. You can also grab an installer for Media Player 10 while you're here.

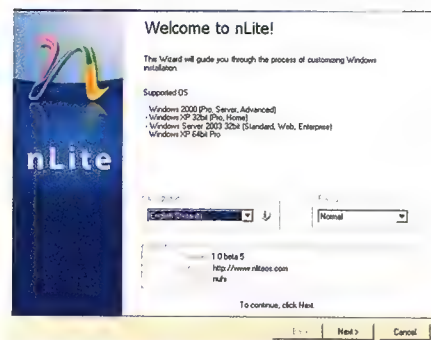
But what about driver updates? Certainly, one of the most annoying things about Windows is the seventy-thousand restart ritual we've

all come to know and love from installing the drivers for all our hardware. Well fortunately, someone's already done the work for you again – mosey on over to Bashrat the Sneaky's site at www.driverpacks.net and download as your heart desires. Make sure to download the base pack, as it contains all the setup tools you'll need to slipstream the other driver packs.

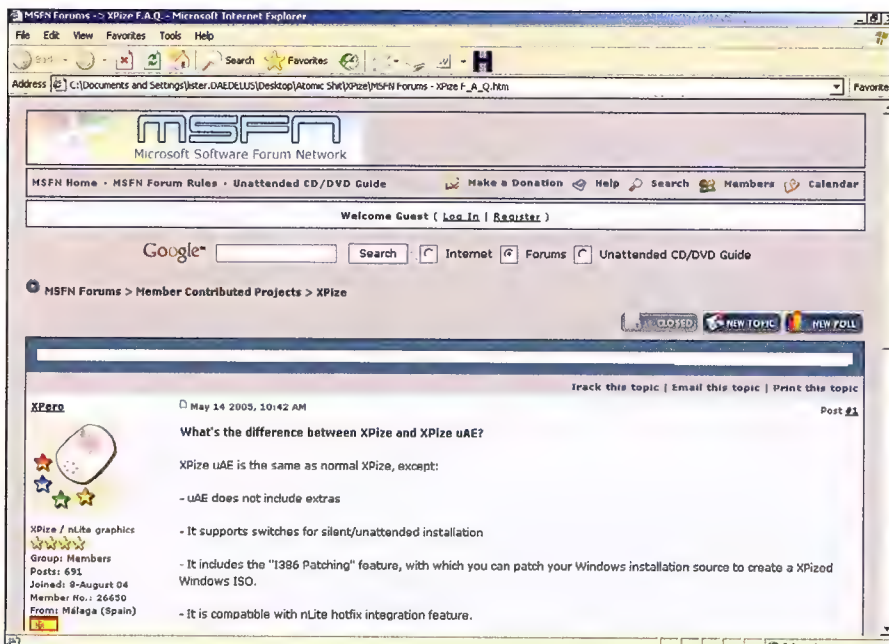
Finally, if you don't have a spare PC, you'll want to install a Virtual Machine such as Virtual PC or VMWare to test your slipstreamed CD on (you may find a free trial that will do the trick), so you'll be working in an insulated environment and still have a working machine to fix the bugs on if something goes wrong!

nLite of the situation

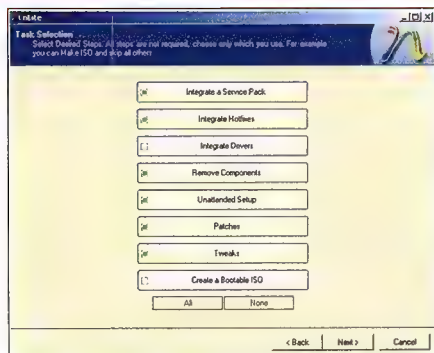
The program that changed everything – download nLite from www.nliteos.com and install it. Start the program and click Next on the first screen. Insert your original Windows XP CD into your CD/DVD drive, click the Browse button and select the drive that contains the XP CD, followed by the location where you want the install files to be copied temporarily for modification. For the sake of this tutorial we're going to use 'C:\XPCD'. Click OK to begin the copy process – and when it finishes, click Next.



▲ The program that started the unattended renaissance, nLite.



▲ If you're stuck, or get bitten by the unattended install bug, MSFN.org is the place to go.



▲ The main nLite screen. Just like Morpheus, it shows you the door, but only you can walk through it.

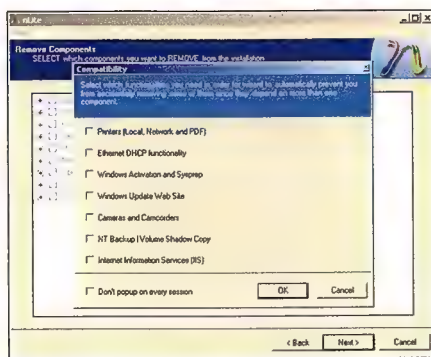
You are now at the main nLite screen. Click next to bypass the presets screen, then select Integrate a Service Pack, Integrate Hotfixes, Remove Components, Unattended Setup, Patches and Tweaks, then click Next.

Click the select button, browse to where you downloaded the Service Pack 2 executable, and select it to slipstream it into your install. When the completion notification pops up, click OK and then Next to take you to the Hotfix integration screen. This is where we install all our patches. Click the Insert button, and select RyanVM's update pack you downloaded earlier (the .CAB file). If you also happened to grab the Media Player 10 CAB from his site, import that as well. Click Next, and then Next again to skip the Integrate Drivers screen. Alternatively, if RyanVM stops hosting you can slipstream MP10 manually after the nLite configuration has finished by using Gnome's tool, downloadable here: www.msfn.org/board/index.php?showtopic=45917.

Pass me the scalpel

Now we get to remove those bits of Windows that we don't want installed in the first place, like the amazingly annoying Zip Folders, Security Centre or the gratuitous Imap service – be careful though, as some programs that you may want to install later are heavily dependent on certain modules that are installed by default with Windows (Internet Explorer and Media Player in particular). Removing any of these dependencies will obviously break the aforementioned programs – and may also break Windows itself, so again – be careful! A good rule of thumb is to only trim the fat, and nothing that you may need in the future if your hardware or interests change. So for now, check everything in the warning box to hide certain areas of Windows from being removed, then go on to the removal of components proper.

If you want a greater range of options, and feel that you know what you're doing – don't check anything in the warning box at all. Expand the various trees and mouse over each item to get an explanation of what it does, and what may be dependent on it if you're not sure. There is



▲ Protect yourself from yourself – filter out components whose removal could be harmful.



▲ A reasonably safe setup.

also an up-to-date list on the msfn.org forums listing found dependencies of programs, so it may be wise to gloss over that beforehand. Once you're done selecting the components for removal, click Next.

Sorry, I'm not here

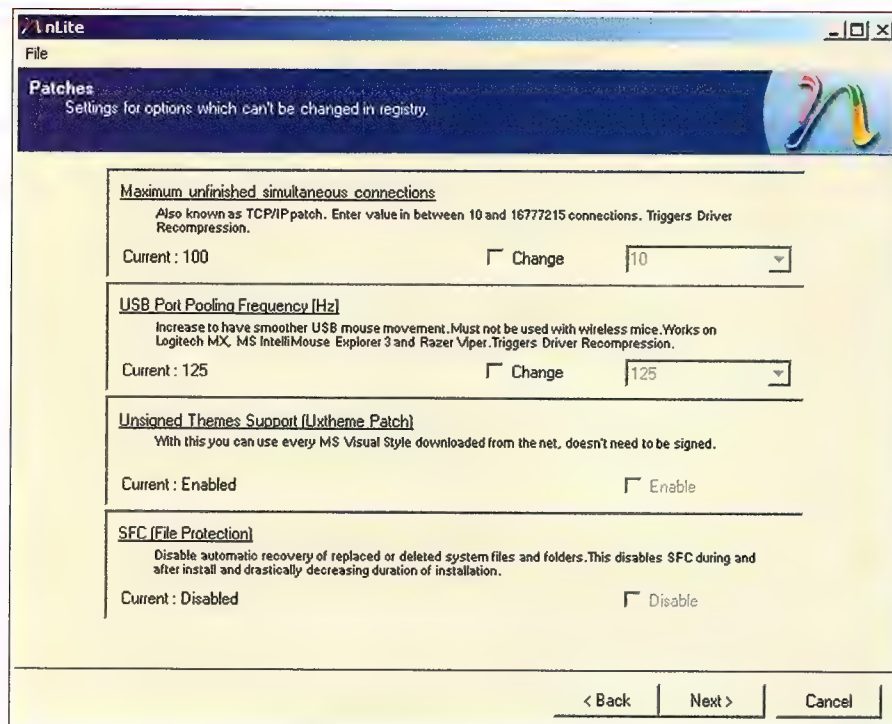
We're now presented with the unattended installation options – or for those new to the concept, details that are preset so that during the install the user shouldn't have to enter a thing – just stick the CD in and go. Once again for home use it is probably wiser to err on the side of safety and set the unattended mode to DefaultHide or ProvideDefault rather than the full blown Unattended (you can get definitions for each mode by clicking on the information bubble icon). Set your options as you see fit along the five tabs at the top, which include such time saving options as pre-inclusion of your CD Key, setting Timezone/Language and the default resolution and refresh of your screen. If you're not sure what an option means, most will display a tool tip if you hover the mouse over them. When you're done, click Next.

Apply the TCP/IP patch to undo the damage made by SP2 and make Windows P2P file sharing friendly again – 100 connections should be more than enough. If you're a hardcore gamer, you may also wish to increase the frequency at which the USB port polls here for greater mouse responsiveness (note that this will only affect corded mice). Enable unsigned themes, and disable SFC if you wish (probably a good idea considering the amount of customising we're doing), then hit Next.

Finally we come to the tweaks screen, where you can set some final options, apply a number of registry tweaks and determine a service's initial state. Spend a bit of time under the Tweaks tab – setting the right options here will save you a huge amount of setup time later in Windows – but like the component removal may also bork things up, so be careful what you choose. When you're done, click next, and then say Yes to the prompt to begin the integration/modification of your install files. This may take a while, so go make yourself a coffee or other amiable drink.

Driver reviver

Remember those driver packs we downloaded earlier? Let's add them in. Extract the base pack to a temporary folder, and copy the .7z files of the other driver packs into the DriverPacks subdirectory. Double click on the



▲ Patch Microsoft's files so they act as they should.

BTS_DPs_Slipstreamer_Vxxxx.cmd file ('xxxx' representing the build number of the installer), and you will be presented with three methods. Method 1 will prepare the driver files for your disc, using Microsoft's CAB compression – you'll probably need a DVD to cope with this. Method 2 prepares the drivers compressed in 7z form, to be decompressed to the hard drive and installed before GUI setup begins. Method 3 sets up the 7z files on the CD as with Method 2, but rather than extracting it copies them straight to the hard drive, then extracts them locally. Enter the number that best suits your needs (for space saving, 2 is the best option), then press Enter (and be prepared to wait). Once the job is done, copy the contents of the UWXPCD_ROOT folder that's created to C:\XPCD, then double click on RUN_ME.CMD in the C:\XPCD directory, and follow the steps. When all is done, choose GuiRunOnce by entering G and hitting Enter, then Y and Enter to keep the drivers on the hard drive afterwards.

Pretty icons

Noticed that Microsoft hasn't updated some of their icons to take advantage of XP's high colour, alpha capable features? Then XPize is for you (unless you run Win64 – then stay away!) Not only does it patch your files to incorporate spiffy new icons, it also includes a bunch of extras such as a new startup screen and themes. Point your browser towards xpero.msfn.org/?page=downloads and download

a copy – once done, then execute the file and choose 'Patch i386 Files' and browse to your C:\XPCD\i386 folder. By default it copies the patched files into a different directory, so you can choose which files you overwrite later. This is useful if clashes occur – for example, as of the 4.0 final of XPize, there is a problem with the patched msxml3.dll (MSXML3.DL_) and PowerDVD – so simply don't overwrite this file in your XPCD\i386 directory. Check out the Support page on Xpero's site for current incompatibilities, and if you want greater control over what is patched, browse the Advanced Info page for some command line switches. As a final note, if you find your desktop icons are surrounded by a white or black line after installing XPize – your display probably isn't set to 32-bit – so make it so!

Testing 1, 2, 3

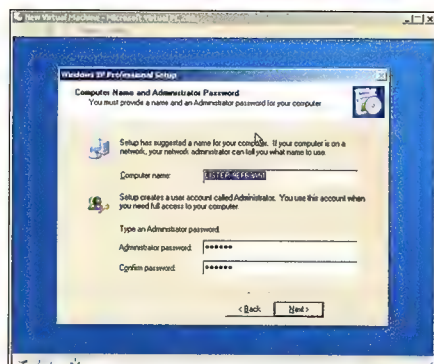
OK, time to round everything up and make sure it's working as planned. Open nLite again, and press the blue arrows icon to rescan the current directory (which should be where your temporary install files are). Click Next, then deselect everything but Create a Bootable ISO. Click Next again, rename the ISO label to whatever you desire, then click the Make ISO button, name your ISO and hit Save – this should generate a CD image.

From here there are a number of methods you can employ – either burn the ISO file to CD or DVD using something like Nero, load it

directly into a Virtual Machine that supports ISO files (In Virtual PC, start the Virtual Machine then go to CD -> Capture ISO Image), or load it indirectly by installing Daemon Tools (www.daemon-tools.cc), mounting the image and bridging the virtual drive to your Virtual Machine. You'll want to use the install for a while before elevating the status of your shiny new disc to 'standard install', as well as install any applications on it you will be using in order to fully test it out – there's nothing worse than having a partially or completely broken Windows, so go for broke trying to, er, break it. If everything stays sound, congratulations! You've created a successful slipstreamed CD!



▲ Processing... just a moment... processing a bit more...



▲ Keep things isolated and safe in the sandbox environment of a virtual machine.

Rounding the post

So there's your simple slipstream – at the time of writing if you've included all updates and drivers, your XP install should weigh in at around 670MB – next issue we'll look at busting that to something more worthy of a DVD by automating post-installation of applications such as Java or FireFox, as well as removing further stuff and hacking around with the Windows interface. Oh, and if you like what you've seen, pop over to the msfn.org forums and start contributing, or if you have a few spare dollars, donate to the authors of these wonderful tools.

MSY Offers SLI Bargain Prices that are Out of This World!

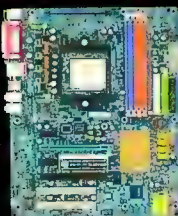


GIGABYTE
TECHNOLOGY



GIGABYTE K8 Triton™ series GA-K8N-SLI NVIDIA nForce4 SLI Chipset

- AMD Athlon™ 64 platform
- NVIDIA SLI Multi-GPU function
- Dual Channel DDR400
- NVIDIA SATA 3.0Gb/s and RAID
- Gigabit Ethernet Solution
- NVIDIA ActiveArmor™ powered Firewall
- 8 Channel Audio



GIGABYTE GV-NX66T256D NVIDIA GeForce 6600GT

- Powered by NVIDIA GeForce 6600GT VPU
- Supports NVIDIA SLI Technology
- Supports PCI Express and 8 pipelines
- Microsoft DirectX 9.0C and OpenGL 1.5 support
- Integrated with the industry's best 256MB GDDR3 memory and 128-bit memory interface
- Features dual DVI-I / D-sub (by adapter) / TV-OUT
- Supports HDTV function and HDTV cable enclosed
- Unique Silent-Pipe design



GIGABYTE GN-BC01 AirCruiser G Desktop Router

- Full wireless connectivity and routing directly from your Desktop PC
- Also works as Access Point with full WDS functionality
- Innovative PCI design easy to install and is space-saving
- Supports any 802.11b and 802.11g wireless device



M.S.Y. Technology Pty. Ltd. Best Price Daily Updates <http://www.msy.com.au>

For more info call 02 9648 4116

AMERIKAS 100% A-Grade Service - 100% Satisfaction - 100% Quality - 100% Value
Morningside: 108 Inwood Road, Morningside, QLD 4170 (07) 957 9841
East Maitland: 121 Maitland Road, East Maitland, NSW 2320 (02) 957 2000

Auburn: 14 / 191 Parramatta Road, Auburn NSW 2144 (02) 9648 4116

For more info call 02 9648 4116

Clayton: 100% A-Grade Service - 100% Satisfaction - 100% Quality - 100% Value
Maitland: 121 Maitland Road, East Maitland, NSW 2320 (02) 957 2000
Parramatta: 14 / 191 Parramatta Road, Parramatta NSW 2144 (02) 9648 4116

For more info call 02 9648 4116

Clayton: 100% A-Grade Service - 100% Satisfaction - 100% Quality - 100% Value
Maitland: 121 Maitland Road, East Maitland, NSW 2320 (02) 957 2000
Parramatta: 14 / 191 Parramatta Road, Parramatta NSW 2144 (02) 9648 4116

Need for speed

Leigh Dyer says there's more to Linux than selecting services and bashing at BASH.



Back when Linux was but a twinkle in Linus' eye, games weren't exactly a priority for the fledgling platform. Over a decade later, this remains the same – or does it? Popular perception is that Linux is not a gaming platform, and certainly mainstream support for it from gaming developers is limited. However when it works, it's beautiful. Linux provides speed, stability, and oodles of features, but before game developers can do their thing, the platform needs stable and fast drivers for 3D hardware.

It's been a while coming, but 3D support under Linux is now finally becoming mature. So much so, in fact, that the Big Two of NVIDIA and ATI provide almost the same functionality for their cards under Linux as they do under Windows.

So this month we'll take a look at making the most of your graphics drivers under Linux, and how to tweak them to extreme.

```
lsd@clutus: /home/lsd
File Edit View Terminal Tabs Help
lsd@clutus:~$ sudo rovclock -c 350 -m 245
Radeon overclock 0.6b by Hasw (hasw@hasw.net)

Found ATI card on 01:00, device id: 0x4153
I/O base address: 0xe000
Video BIOS shadow found @ 0xc0000
Reference clock from BIOS: 27.0 MHz
lsd@clutus:~$ sudo rovclock -i
Radeon overclock 0.6b by Hasw (hasw@hasw.net)

Found ATI card on 01:00, device id: 0x4153
I/O base address: 0xe000
Video BIOS shadow found @ 0xc0000
Reference clock from BIOS: 27.0 MHz
Memory size: 131072 kB
Memory channels: 0, CD, CH only: 0
tRcdR0: 4
tRcdWR: 2
tRP: 3
tRAS: 8
tRFD: 3
tR2M-CL: 3
tWR: 2
tW2R: 2
tW2Rsb: 1
tR2R: 2
tRFC: 14
tWL(0.5): 2
tCAS: 3
tCHD: 0
tSTR: 1
XTAL: 27.0 MHz, RefDiv: 12
Core: 351.0 MHz, Mem: 243.0 MHz
lsd@clutus:~$
```

▲ The many faces of nvclock: GUI-based and command-line overclocking.

NVIDIA

This has to be the number one priority – you're reading *Atomic* after all. Older NVIDIA cards (pre-GeForce FX) require a tool called nvclock (www.linuxhardware.org/nvclock), while current cards can use the control panel bundled with the drivers (covered below).

For nvclock grab the 0.8 beta source code, extract it out and use the usual build process:

```
tar zxvf nvclock0.8b.tar.gz
cd nvclock0.8b
./configure
make && sudo make install
```

This will build the nvclock command-line tool, as well as GUI versions (nvclock_qt or nvclock_gtk) if you have GTK or QT development packages installed. The GUIs are quite easy to use – just remember to run them as root – but the command-line tool is handy when you have to SSH in from another system because

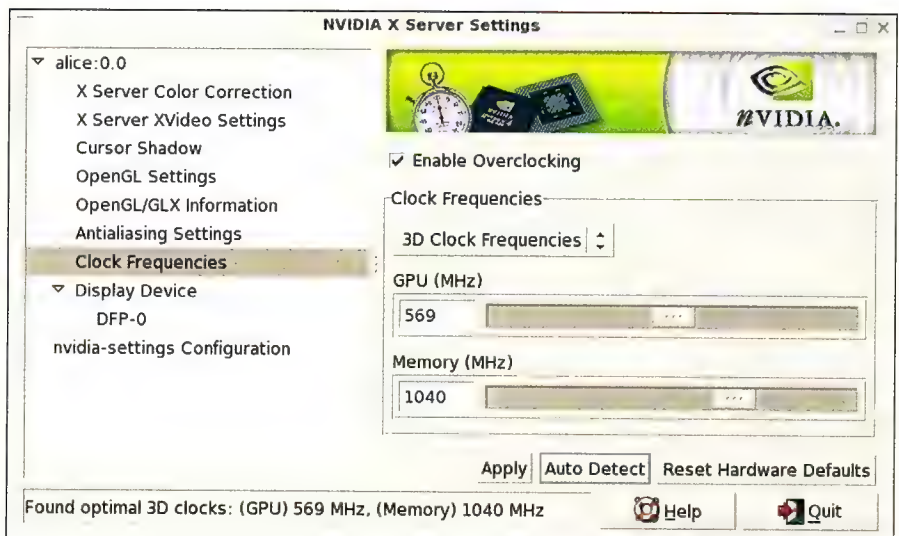
you've clocked a little too high and trashed your display. Run 'nvclock -l' to get the current speeds, and 'sudo nvclock -r' to reset the card to its defaults. Use the '-n' and '-m' options to set the clock speed of your core and RAM respectively:

```
sudo nvclock -n 480 -m 550
```

On more recent cards, nvclock doesn't work as expected because the driver automatically clocks cards up and down when switching between 2D and 3D modes, overwriting your own tinkering. The 'official' way to do things now is through the driver itself, which since version 1.0-7664 has Coolbits support, just like the Windows drivers.

To enable Coolbits, edit your X config file (typically /etc/X11/xorg.conf) and find the 'Device' section for your card. Add the following line:

Option "Coolbits" "1"



▲ Recent NVIDIA cards can use Coolbits, much like under Windows.

Then, run the 'nvidia-settings' tool that gets installed alongside the drivers – you might already be familiar with this. The NVIDIA settings tool lets you tweak all sorts of driver options, and adding the Coolbits option to your X config enables a new 'Clock Frequencies' tab. If you're lazy, you can hit the 'Auto Detect' button and have the app automatically determine a safe overclock for you, but it tends to be a bit conservative so you'll probably want to do some manual tweaking afterwards. If you prefer, you can also use nvclock to do your tweaking; it can't set the clocks directly, but it now supports setting them through Coolbits, just like the nvidia-settings tool.

Nvidia-settings can change your clock speed from the command-line too; it has options that let you specify values for all sorts of tweakable attributes, including clock speeds. Run 'nvidia-settings -q all' to get a list of the available attributes and their values. To set the clocks, try something like this:

```
nvidia-settings -a
GPU3DClockFreqs=510,550
```

ATI

For overclocking ATI cards, you'll need 'rovclock' (www.hasw.net/linux), which should support all RADEON models. Grab the latest tarball, extract, and build:

```
tar jxvf rovclock-0.6c.tar.bz2
cd rovclock-0.6c
make
sudo cp rovclock /usr/local/bin
```

rovclock is a simple command-line affair; there's no pretty GUI at all, but it still does the job quite nicely. Run 'sudo rovclock -l' to get the current speeds. If they don't match what you'd expect for your card, try adding '-x 1432' or '-x 2950' to the command line. To set the core and RAM clocks, use the '-c' and '-m' flags respectively.

```
sudo rovclock -c 450 -m 550
```

One thing you might notice while using rovclock is that it sometimes doesn't work as expected if you try specifying only the '-c' or '-m' options, rather than using both. You can still vary them one-at-a-time, but make sure you do set a value for each of them every time you run rovclock.

Regardless of which tool you need to use, you'll probably want your overclock of choice

```
lsd@clatus: /home/lsd
lsd@clatus:~$ sudo rovclock -c 350 -m 245
Radeon overlock 0.6b by Hasw (hasw@hasw.net)

Found ATI card on 01:00, device id: 0x4153
I/O base address: 0xe000
Video BIOS shadow found @ 0xc0000
Reference clock from BIOS: 27.0 MHz
lsd@clatus:~$ sudo rovclock -l
Radeon overlock 0.6b by Hasw (hasw@hasw.net)

Found ATI card on 01:00, device id: 0x4153
I/O base address: 0xe000
Video BIOS shadow found @ 0xc0000
Reference clock from BIOS: 27.0 MHz
Memory size: 131072 kb
Memory channels: 0, CD, CH only: 0
tRCDRD: 4
tRCDWR: 2
tRP: 5
tRAS: 8
tRRD: 3
tR2W-CL: 3
tWR: 2
tW2R: 2
tW2Rsb: 2
tR2R: 2
tRFC: 14
tWL(0.5): 2
tCAS: 3
tCMD: 0
tSTR: 1
XTAL: 27.0 MHz, RefDiv: 12
Core: 351.0 MHz, Mem: 243.0 MHz
lsd@clatus:~$
```

▲ rovclock for ATI cards is simple but effective.

kicking in automatically on boot, rather than having to set it manually each time. You could actually do it at boot in an initscript or something, but you'll probably find that the video driver resets the clocks when starting X; it's a common ploy to have cards boot at lower speeds than usual, with the driver clocking them up to proper levels. Because of this, you really need to set the clocks during your desktop environment startup, after X has started.

On a GNOME desktop, you can add a program to your desktop startup by opening the Sessions settings. Go to the Startup Programs tab, click on Add and enter in the command to run. Under KDE, you'll need to put the command in to a short shell script, and place that in to your ~/kde/Autostart/ directory. Your script just needs to be something like this:

```
#!/bin/sh
sudo rovclock -c 450 -m 550
```

As long as it's in that folder, and marked as executable (**chmod +x**), you can call the file whatever you like. If you're not using KDE or GNOME, you're probably already using a custom .xinitrc or .xsession file – just add the command to that. Easy!

Unless you're using Coolbits overclocking, the tricky part comes when you realise that you just told your desktop to run a command with 'sudo' at startup, and it's going to ask for that password of yours to succeed. Even worse, if you happen to have used sudo within the last few minutes it might just work, making it one of those incredibly fun problems that magically goes away

once in a while. The solution is to configure sudo to let your user account run the overclocking tool without needing a password.

Edit your /etc/sudoers file (using 'sudo visudo' – never edit it directly) and look for the line that lists your user and its privileges; there might be an entry under your username, or one for a group (such as 'admin' or 'wheel') that you've been added to. Edit this line and add 'NOPASSWD:', followed by the full path to your overclocking tool, like this:

```
%admin ALL=(ALL) ALL NOPASSWD:
/usr/local/bin/rovclock
```

Alternatively, if it's your personal box and you're not too worried about people coming along and doing obscene things to it, you can tell sudo to let you run anything as root without a password:

```
%admin ALL=(ALL) NOPASSWD: ALL
```

FSAA prettyness

Full screen anti-aliasing was all the rage back in the Voodoo 5 days, but today it's something we take for granted. On NVIDIA cards, you can turn on FSAA on a per-application basis by setting the '___GL_FSAA_MODE' environment variable, and then running your application from the same terminal window:

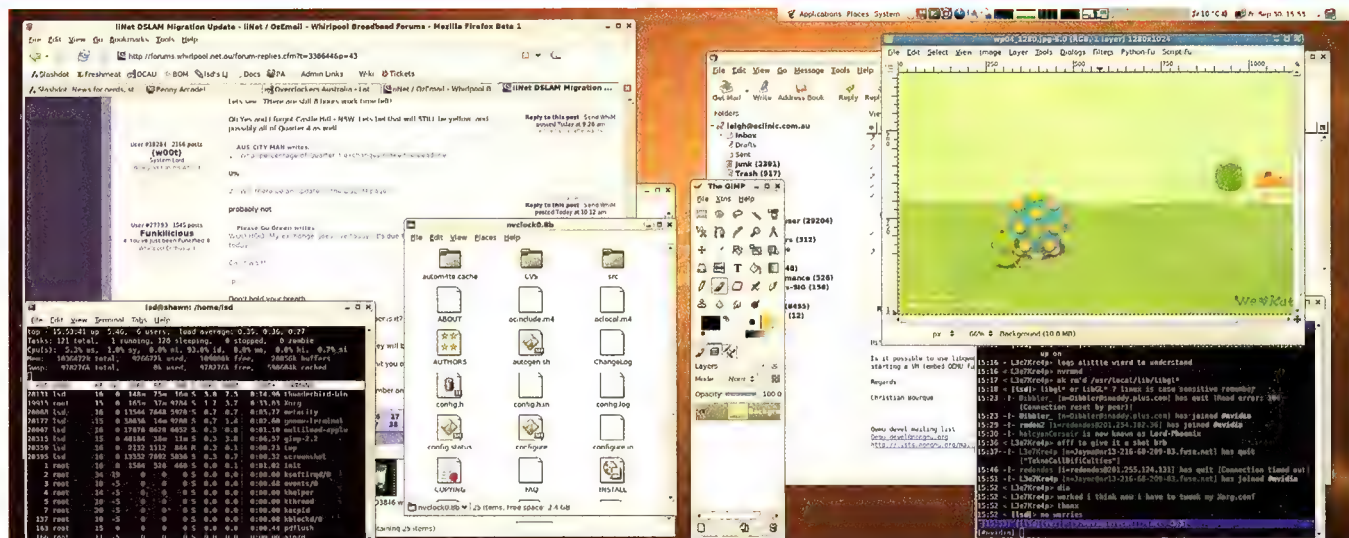
```
export ___GL_FSAA_MODE=4
ut2004
```

The values that ___GL_FSAA_MODE takes are just simple integers that enable different settings depending on the card; our value of 4 here enables 4x bilinear multisampling on GeForce FX or later cards. The official NVIDIA driver README has tables listing the valid values and the settings they correspond to for each type of card.

You can similarly enable anisotropic filtering by setting the '___GL_LOG_MAX_ANISO' environment variable: 0 disables it, while 1, 2, 3, or 4 enable 2x, 4x, 8x, and 16x respectively, though only 6800 and higher cards go all the way up to 16x.

On ATI hardware, FSAA is more cumbersome to use because it's configured from the Xorg configuration file, rather than on-the-fly like in the NVIDIA drivers. Open your /etc/X11/xorg.conf file, skip through to the 'Device' section for your ATI card, and set the following options:

```
Option "FSAAEnable" "yes"
Option "FSAAScale" "4"
Option "EnablePrivateBackZ" "yes"
```

▲ A GeForce 6600 pushing two monitors at a total of 2560 x 1024 pixels. Mmm.

Unfortunately, having these options enabled is still no guarantee that FSAAs will work. Certain models, including the RADEON 9600 variants (and the 9550) simply refuse to enable FSAAs, reporting this in the `/var/log/Xorg.0.log` file:

(==) fglrx(0): FSAAs enabled: NO

If you find this in your logs, there's probably very little you can do about it – ATI have known about the problem for a while, but there's no fix yet. There's a community-driven Bugzilla setup for the ATI drivers available at ati.cchtml.com that tracks the status problems like these.

Multihead shennannigans

Xorg has supported spanning a desktop across multiple displays since the XFree86 4.0 days, but due to issues in the generic Xinerama extension, both ATI and NVIDIA have added special support for dual-head cards in to their drivers. These skip X's multi-monitor configuration and build what looks to X like a single large display, enabling features like multi-head 3D that otherwise wouldn't work.

NVIDIA's TwinView is configured through options in the Device section for your card:

Option "TwinView" "true"
 Option "TwinViewOrientation" "RightOf"
 Option "SecondMonitorHorizSync" "31.5-75"
 Option "SecondMonitorVertRefresh" "60-100"
 Option "MetaModes" "1280x1024, 1280x1024"

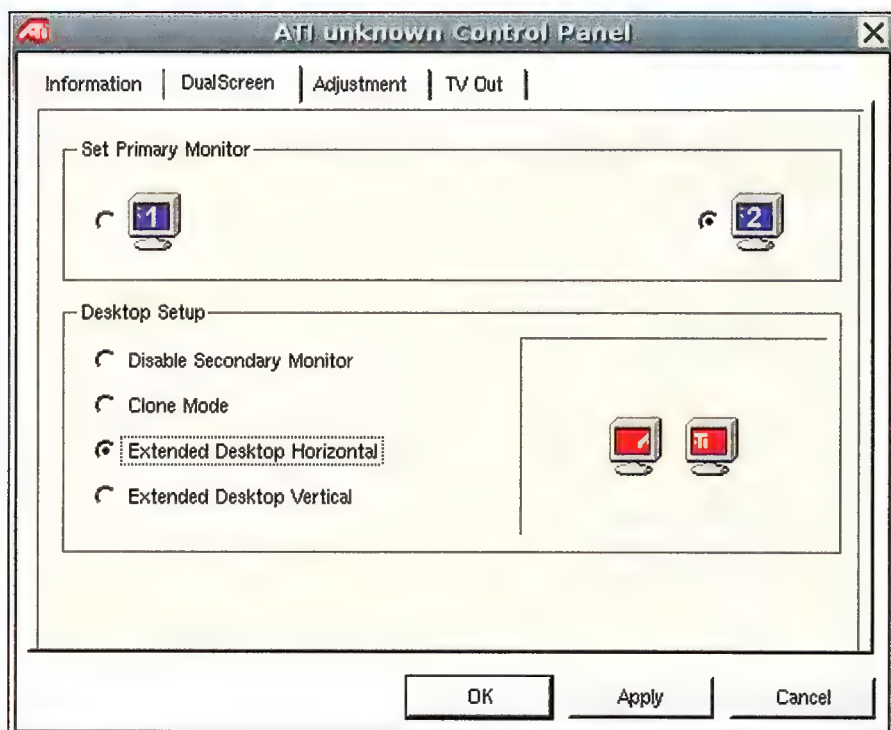
These options describe the capabilities of the second monitor, and it's position on your desk relative to the primary monitor. The MetaModes option describes the screen modes to use on the two heads of your card – here, we're using 1280 x 1024 on both. You can add extra sets of resolutions by separating them with semicolons.

On ATI hardware, the options are similar, but simpler:

Option "DesktopSetup" "Horizontal"
 Option "HSync2" "31.5-75"
 Option "VRefresh2" "60-100"

The DesktopSetup option describes how the two screens are positioned; if you want to stack one on top of the other, specify 'Vertical' here instead. If the monitors are the wrong way around, add 'Reverse' to the option value. You can also tweak these options through the ATI Control app (fireglcontrolpanel). To disable dual-head, change DesktopSetup back to 'Single', or just comment it out.

So now that we have driver set up for speed and style, all we need is for more developers to come to the party!



▲ If ATI's multihead options get confusing, you can use their handy GUI.

WWW.SCORPTEC.COM.AU Call 1300 726 770

ULTIMATE WEAPON

COME GET SOME!!

NEED MORE
FIREPOWER?
come to scorpTec
for all of your high end
gaming needs

FOR ALL OF YOUR
HEAVY DUTY
NEEDS

IMPORTANT

Check out our
store ONLINE

YOU CAN FIND US:
Mel ref pg70, J12

Scorpion Technology

Unit 4/2, Garden Road, Clayton

VIC 3168

Ph: 1300 726 770

Fax: 1300 726 771

ICQ: 27736587

Email: sales@scorpTec.com.au

Open: Mon-Fri: 10am - 6pm

Saturday: 10am - 3pm

Sunday: Closed



Warm and fuzzy

Steven Macerak Jnr shows you how to take your beast machine, and add fur!



One of life's little pleasures is the freedom to walk down the street in a green velvet suit and not get hassled by 'the man'. But if the thought of appearing in public wrapped in gaudy flammable polyester is too extreme then this is for you. However before we start – a little warning...

In the sleazy world of the LAN the 'furmod' is a rather polarising casemod. In opposing camps we have furmod obsessed 'muffers' (short for 'muff munchers') up against the window-paint-LED 'swankers' (because you can't spell 'swanky' without... well, you get the idea).

Importantly, a furmod is done for looks – not noise reduction. If you'd like a quiet PC, install acoustic foam insulation inside your case (along with some silent fans). Lastly, like most mods – this one's permanent!

Got muff?

Unless you're lucky enough to have a large (preferably dead) furry animal at hand you'll

need to visit a fabric store like Spotlight.

Imitation fur has a range of about 30 colours and includes patterns such as tiger, leopard, alligator, zebra and cow skin.

Prices start at \$14/m for the cheap stuff (rodent hotbox anyone?), while really good quality fur goes for over \$150/m (which is ironically more expensive than the real thing). All fabrics come in 1.5m widths, and 1/2m of fur should just be enough to cover most PC cases in a single 'coat'.



▲ Glue. It binds us together.

Sticky Fingers

When it comes to gluing fur down it's best to work with contact adhesive normally used to stick flooring and bench-top laminates down. A 250ml tin of Selleys Kwik Grip is around \$7.50 at Bunnings. For smaller jobs buy the squeeze-tube version.

Selleys also make Gel Grip which is the same product but in a non-drip formula (\$9.20 for 250ml). You may find it dries too quickly to use with furmodding though (but it's great for acoustic foam).

Gluing tips

1. Glue is a toxin. Work outside, don't breathe the vapours and don't get it over your fingers.
2. Cut up an ice cream container into various sized pieces (or use a credit card, like your sister's) to spread the glue (and only apply glue to the PC case and not the fur itself).
3. Only apply a thin smear of glue. Excess glue can soak beyond the fur's backing material into the hair fibres (causing ugly, solid clumps).
4. For thin sections of fur, or for edges that refuse to stick down, use liquid superglue.

Design tips

1. If you're going to sell your case to someone else be aware of copyright issues like: themes, colours, artwork, logos, fonts or clipart.
2. Keep the design simple and the number of colours down. You don't want your furmod looking like something the cat coughed up.
3. Furmodding doesn't require you to remove any hardware from inside your PC but you may want to spray-paint any bare plastic/metal areas first for a better look.
4. If you plan to use white fur then avoid using dark coloured paint in those areas: it will show through this slightly transparent fabric colour.

Kuztom kasez

For the ostentatious furmodder a simple logo or clipart image can be reproduced in fur on your case. Simply print a large version of your design

What you need

1. Computer case
2. 1/2m imitation fur fabric (from \$14/m)
3. Contact adhesive (Selleys Kwik Grip)
4. Liquid superglue (bottle & brush type)
5. Scissors and hobby knife
6. Various fur colours
7. Cheap spray-paint
8. Spray-paint stencil (e.g. clipart or logo)

and use it as a spray-painting mask (called a stencil), or just draw it by hand. This will show you exactly where to stick the various colours of fur to.



▲ The furmod for this article was 'inspired' by Rammstein's latest CD artwork (*Reise, Reise*) and the Hitman (PC game) logo.

Merkin a mess

The general plan is to try and cover each section of the PC case in one piece of fur. This helps minimise ugly glue joins (and fruck-ups).

Also, orientate the fur's 'grain' as shown in the images, this will help keep the hairdo neat and help hide join lines. Play with some spare fur before tackling your project or even fur an old PC case or something of a similar shape.



Furring tips

1. Use the least amount of glue to do the job. White fur (especially) will reveal drips.
2. Don't apply glue to areas you don't want fur to be (optical drives, air vents, USB ports): if it's stuck down you won't be able to come back later and trim the unwanted material.
3. Sometimes it's easier to glue the fur down first – trim later; while sometimes it's easier to pre-cut the fur to shape – then glue.
4. Always allow your stencil paint to fully dry: contact adhesive will cause the paint to bleed through the fur if you're not careful.
5. Carefully part the pubes... err, 'hairs' when cutting fur to ensure you're cutting the backing material only.
6. Don't over-stretch the fur: only gentle tugs are needed to get wrinkles out.



▲ If you accidentally give your piece of fur a 'haircut' – bin it, and start again.

The front panel

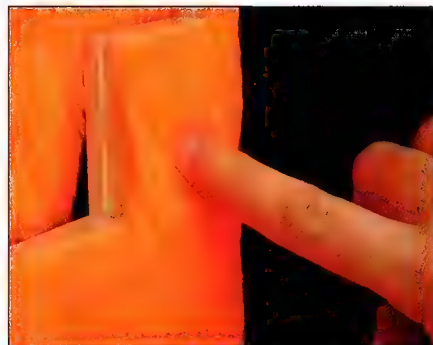
Furring any panel on a PC case begins the same way.

Start by lovingly applying a 2cm strip of glue along an entire panel edge, gently press the fur's backing material into the glue, and most importantly – don't dick with it until the glue sets (about 10 minutes). This initial step gives our material an 'anchor' we can (gently) pull against when furring the rest of the panel.

Once the initial area is dry apply glue to the rest of the panel. On hot days the glue will begin drying quickly so you may want to work in smaller sections rather than covering the entire panel in one go.

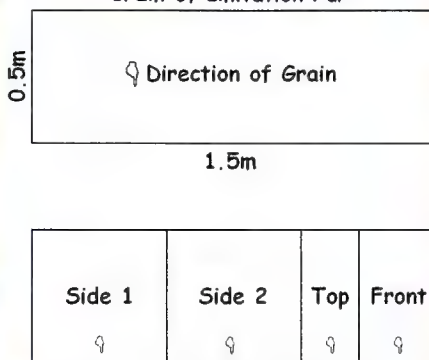
Gently pull the material (just enough to get the slack out of it) and lay it over the glued area. Press down and leave it alone. Lastly, when it's fully dry trim the edges with scissors or a hobby knife.

Important – leave a glue-free-zone around the power buttons – 2cm is good. This will let the fur 'stretch': allowing the buttons to work. But don't worry as the fur will always spring-back; thereby hiding the location of your power switch!



▲ Push the fur down evenly and firmly.

1/2m of Imitation Fur



▲ Be sure to follow the grain of the fur and keep it the same over the entire case. Otherwise you might find yourself in a 'hairy' situation. Oh, the laughter.



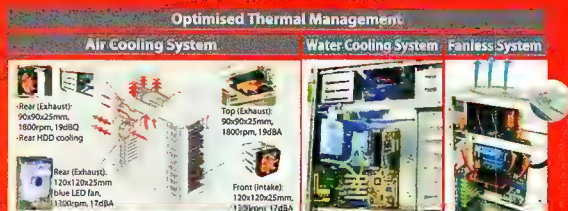
A Case for all occasions

Cool all your Life

Thermaltake Presents... Cases with 11 Drive Bays

Kandalf
THE SUPER TOWER

ARMOR



SPECIFICATIONS - VA8000 & VA9000 SERIES

Drive Bays	10 x 5.25" (external) 6 x 3.5" (internal)
Front Accessible	Up to 10x5.25" 2x3.5"
Dimension (H*W*D)	530x220x595mm

- * Armor & Kandalf cases have similar internal features
- * All black cases have a steel chassis
- * All silver cases have an aluminium chassis



Tenor See The World in A Different Way

New Home Theatre Style PC Case from Thermaltake



Front 5.25" drive bay access

Model Tenor	VB2000SNS	VB2000BNS
Colour	Silver	Black
Net Weight	8.5 kg	
Dimension	170 x 430 x 460 mm (H*W*D)	
Cooling System	● Front (Intake): 80 x 80 x 25 mm fan, 2000rpm, 19dBA ● Rear (Exhaust): Dual 60 x 60 x 25 mm silent fan, 2500rpm, 19dBA	
Front Accessible Internal	3 x 5.25" 2 x 3.5"	
Material	Chassis: 1.0 mm SECC. Front bezel: Aluminum made	
Expansion Slots	7	
Motherboards	ATX, Micro ATX	

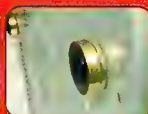


Rear Fan (Exhaust)

Front Fan (Intake)



Dual USB 2.0,
IEEE 1394 Firewire,
Audio & Speaker ports



Non-slip foot stands

Thermaltake AUSTRALIA & NEW ZEALAND

UNIT 11/49 HENDERSON ROAD, ROWVILLE VIC 3178 PH: 03 9763 1622 FAX: 03 9763 1677

EMAIL: sales@thermaltake.com.au www.thermaltake.com.au



Thermaltake
COOL all YOUR LIFE

When it comes to drive bays there are several options:

- * Cut the fur completely away from the optical drives leaving them totally visible.
- * Cut a single flap around all drives (see example shot).
- * Cut individual flaps for each drive (as long as you have somewhere to glue the fur to).
- * Make operable doors (see example shot).



▲ One flap to rule them all.

For PC cases with a front door hiding all this fiddly stuff just apply a single piece of material to the entire panel. Lucky bastards.



▲ Individual flaps for each drive.

The top panel

The top of the case is the easiest panel to cover. You can either glue down an edge of fur first (to act as an anchor), or you can simply glue and fur the whole panel in one go.

For those of you with an exhaust fan on top of

your case: simply trim the excess fur away with scissors or a blade.

The side panels

If your side panel is to be covered in a single piece of fur then follow the previous instructions for the top panel. Otherwise step one is to transfer the logo to the side panel.

For curvy designs (like Hitman) use a stencil and spray-paint.

For straight-edged designs (like the Rammstein) try a CD-R pen and ruler.

You may want to colour in the drawing to make it easier to see.

Stencilling

1. To make a stencil simply print an image larger than normal size (like 400%). A picture this big will take several A4 pages to fit.
2. Glue the sheets together with ordinary paper glue to reconstruct the image.
3. Cut out the image with scissors or a hobby knife.
4. Use sticky tape or Blu-Tack to hold the stencil down.
5. A quick blast of spray-paint and the logo's done (use a felt pen to fix any blurry edges).

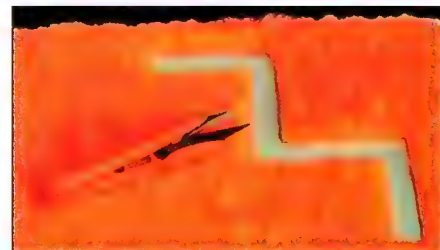
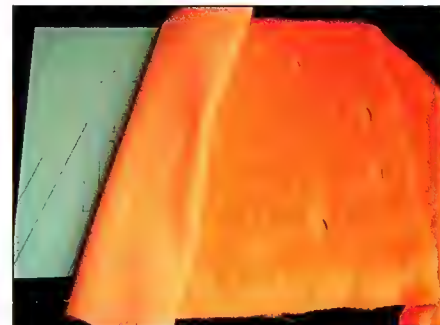
Step two is to glue the background layer of fur down. Again glue one edge down first to act as an anchor and only apply glue to areas where the background layer of fur will go.



▲ Logos add that extra something.

No, these are not the flags of former East Germany. These false-colour pics show you how to glue background fur in stages. If you try and glue large areas (especially in warm weather) the glue dries too fast and the fur won't stick.

As you work across the panel cut little slits into the fur where the logo will need to go. Once the glue has dried come back and remove those areas with fine-tipped scissors or a hobby knife. Make sure you're only cutting the backing material (and don't give the fur a haircut!)



▲ Cut away, but don't damage the fur.

Once you have trimmed the background layer check that all edges are stuck down well. If there are any bits which refuse to do so just use liquid superglue. Oh, and make sure the vacuum cleaner's handy because fur fibres will fly everywhere when cut loose from the backing material (your bedroom will look like a monkey exploded in it; if it doesn't already).

When the background layer has dried it's time to tackle step three: furring the logo. There are two ways to do this:

Like we did with the background layer you can glue the fur on first and trim it to size later...



▲ How cute... a furry Hitman.



...or you can pre-cut the fur to shape then glue. The second method takes longer but works really well on straight-edged shapes.

Careful you don't drip glue everywhere, watch that stray hairs don't get caught in the glue and avoid giving the fur a haircut. One final tip: for strips of fur less than 2cm wide (the Rammstein logo and the 'pointy bits' of Hitman's logo) use liquid superglue because it's less messy than contact adhesive.

With the logos complete this furmod is basically done. However I think it's missing that special Bastard Child touch – muff'liciousness.

Presenting the 17th Bastard Child Furmod. It's amazing how a little paint (and three hours with an airbrush) can 'tart-up' an otherwise OK furmod.

The airbrushing was done with black, red, orange, white and blue paints. The texture effects were created by spraying paint through mesh screens of various patterns. Straight edges are done with masking tape, while circles are sprayed with a stencil.

The most striking thing about this furmod

Meh stockbox, go hotbox!

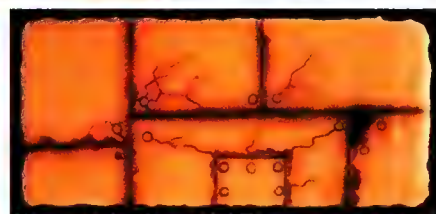
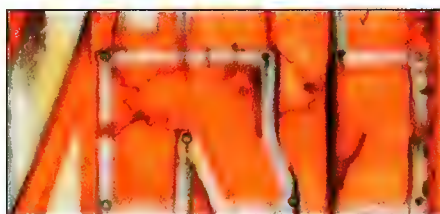
There's only so much you can do with fur on its own. For truly hot box00rs you'll need an airbrush, paint, stencils and masking tape.

An airbrush is the ultimate way to lay down paint but it does take skill. And unlike regular spray-cans, an airbrush will let you vary paint flow and line thickness – with pinpoint accuracy. Use an airbrush for adding small details which are impossible to do with fur.

Ensure the paint is really thin (one-part paint to three-parts thinner) or it will dry in the fur as a solid clump. And always practice on scrap fur first!



▲ It puts the paint on the fur.



▲ Fur mods don't get much better than this. Spend a few hours with an airbrush and you can get similar results!

(besides the fluoro-orange fur) is that the optical drives are well hidden. So too are the power and reset buttons.

Milliput

For special detail parts use milliput – a two-part epoxy similar to putty but it cures rock-hard. It's about \$10 from decently priced hobby stores (like the Victorian Hobby Centre).

This stuff can be used for making glue-on items like teeth, eyeballs and other 3D-objects. Or you can hide it under fur to make furry 3D-features (noses, eyebrow ridges, etc.). Or you can use it like a body filler to blend objects to your PC case (yet another 'skull head poking out of a front panel' anyone?).

You can carve, sandpaper and paint milliput to suit. Use Kwik Grip to stick it down.



▲ Milliput: Adds a little bit of bite.

Conclusion

You will find that furmodding becomes highly addictive and before you know it you'll have an assortment of fur-monitors, fur-printer, fur-speakers, fur-undies...err, perhaps forget that last one.

To keep the fur neat you can give it the odd combing but you might prefer the 'shaggy' look.

Loose fur fibres can get caught on your fan blades (and in dust filters) so make sure you check your PC periodically. You do have dust filters installed right?

As mentioned earlier a furmod will do diddy-squat to reduce the noise from your PC. This is because fur is not an acoustic barrier – unless it's very thick (high density). This also means it won't work inside the PC case either (it does more harm to your cooling fans than it does good. It also looks incredibly naff).

Also, some people wrongly think that a furmod will increase the temperature inside a PC case. As long as you leave all air-vents clear you will not see any difference to the thermal performance of your computer. A computer keeps cool by convection (airflow in and out of the case) and not conduction (heat transfer via the case itself). So your overlocks will be safe inside your furry beast.

Now, where did I leave that green velvet suit... I wonder.

TURBO MEMORY

pqi
www.pqimemory.com

Sole Distributer

Golden Leaf Technology Pty. Ltd. - Ph : SYDNEY (02) 9922 1686 MELBOURNE (03) 9824 5366 - www.goldenleaf.com.au

RAVE REVIEWS

cont.

Aug. 26, 2005

"Absolutely exceptional memory capable of lower latency timings at stock speeds and still pull through with a jaw dropping overclock to boot."

tweaknews.com

Aug. 31, 2005

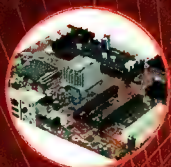
"In our tests, the PQI3200-1024DBUs turned out terrific performance along with impressive overclocking results....to top it off they're priced to sell!"

hothardware.com



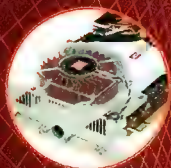
THE ULTIMATE MEMORY FOR hardcore GAMERS

**CROSS
FIRE**



Radeon Xpress 200 Motherboard
CrossFire Edition

+



ATI **RADEON** X1800
ATI **RADEON** X1800
ATI **RADEON** X1800

or CrossFire Edition
RADEON X850 / RADEON X800

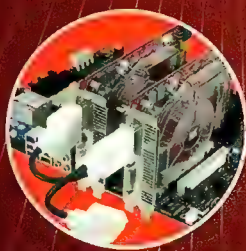
+



ATI **RADEON** X850
ATI **RADEON** X850
ATI **RADEON** X850

RADEON X850
or RADEON X800

=



CrossFire

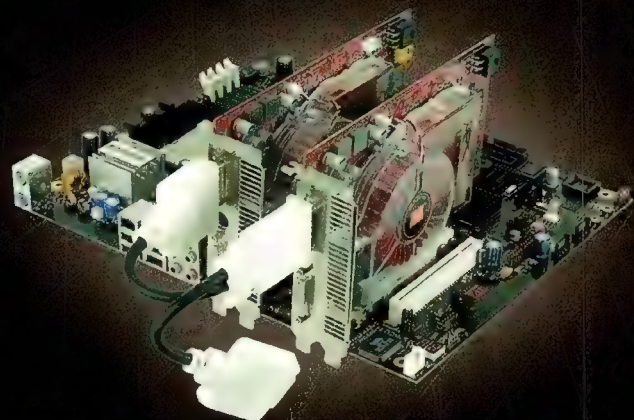
MULTIPLY & CONQUER

CrossFire -
The **Dream** Game Platform

- **D**ouble up speed
- **R**emove bridge connection
- **E**xcellent image quality
- **A**ccelerate all game
- **M**ultiple brand combination



ati.com



gameplay

Games, gamers, gamers Atomic-style



It's been a long time since a week like last week. We all know that the big games hit at Christmas, it's the way it is and has always been. It's a system that lets us groove into the amazing games while we're on summer holidays. To sit at home gaming away and not spending the money we don't have after buying games and presents.

But last week, the avalanche. Semi-unexpectedly it didn't rain games, it poured. It drenched. Two weeks ago I was playing Total Overdose, a cutesy Mexican themed 3rd rate job that looked pretty damn good, all alone in the games landscape. But today I'm looking at F.E.A.R., Serious Sam 2, Civilization 4, Quake 4, The Movies, Black and White 2, Myst V – and they are just the games I'm personally hot for, on top of that there's loads more that fit every genre under the gaming sun.

Crikey. Next week we'll have X3: The Reunion and not long after that, Elder Scrolls IV: Oblivion. Each of these wonderful games could easily give you a solid couple of weeks' entertainment, and I know that most of you will focus on just a couple of the big games for Christmas. But which to give your dedicated gaming time to? There's a whole lot of gaming there for the taking, and it's all of supreme quality. It's a tough call. You don't want

to miss out on any of them, and you don't want to queue them up so that by February 2006, maybe, you'll have time to play Quake 4.

We will do our best to help you with good reviews that help you decide. At a minimum you can experience some of these games vicariously through these pages! While we are indeed blessed in that we get sent everything to check out, nobody on the mag staff has forgotten what it's like to buy games and we know that you need good advice before you part with the bucks you worked hard for.

Speaking of hard work, the effort that's going into the upcoming Atomic Live event is pretty staggering. All around the Haymarket crew are buzzing and the excitement is hot. We can promise you that Atomic Live will be unique and special, because we're all busting a gut to make it so. We don't muck around at Atomic. If we do a mag, we do it right, if we do an event, then by jingo it's gonna be a ripper.

See what's in store at Live right here, and I hope to see you there on December 8th! For more info check

out www.atomicmpc.com.au/atomiclive

Come play Ben's game.

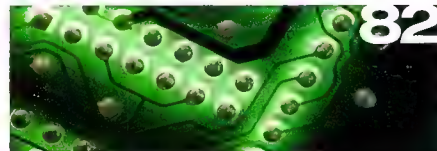


this month



Scanner

It's all about games and the news that surrounds them. Yeah.



Talking Head

Is 128MB enough? Logan Booker tries to answer the riddle of RAM.



Culture Shock

Serenity, Night Watch, and DOOM the movie, what more could you want?



Pipeline

Take a bunch of games. Preview them. Write up Pipeline.



Engine Room

We take a look at the Source-powered Dark Messiah: Might & Magic. It's hot as hot can be.

game reviews



Black & White 2



Civilization 4



Quake 4



Far Cry Instincts



Stubbs the Zombie



Soul Calibur 3

short circuits



While there are probably a million versions of Ridge Racer and Tony Hawk for PSP, hardly any non-AAA mainstream games have been released locally for Sony's handheld wonder. So *Atomic* is here to give mad props to the game we've been playing non-stop for at least two weeks. It's Archer Maclean's *Mercury*, and it's a simple little puzzle game not unlike the wooden deck game of old that you tilted to steer a ball bearing through a course and away from holes. Quaint, simple, clever and tricky. *Atomic* likes.

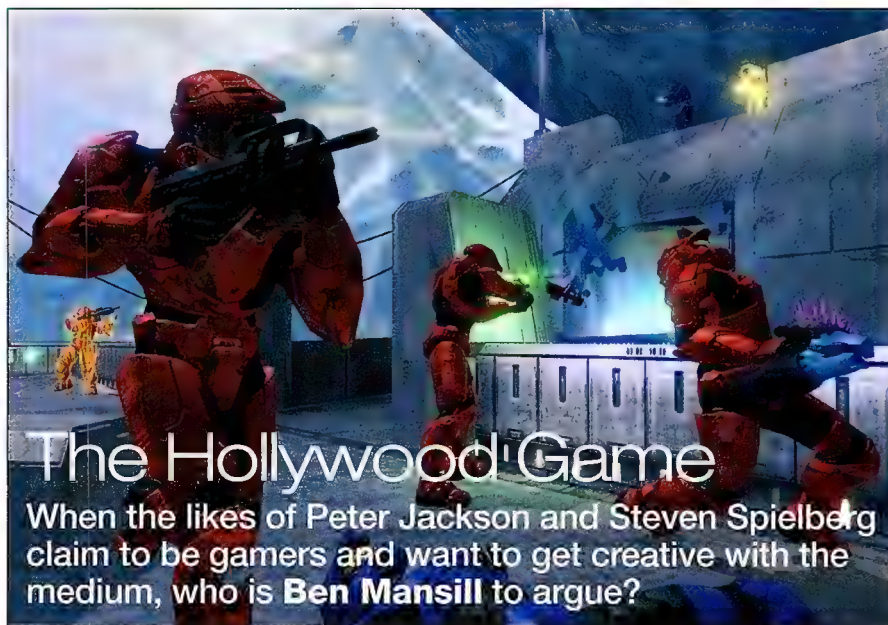
WoWed out? EQ2-the-max? Fantasy MMORPG *Irth Online* goes live right about now. You can't buy a box in a shop, this is an online-only thing, being the way of the future, which is now. Go to www.irthonline.com and see if you like the look of the latest MMORPG to vie for your time and money.

Retro gaming won't go away and just keeps growing. Every year sees at least another year of retro games added to a publisher's Best Of packs. Funny, that. But it doesn't get any more retro than Simon, the cutesy plastic Hasbro blinky lights and colours game of the 1970s. Well Simon has just been released for mobile phones, check out your favourite mobile content outfit and download it, then enjoy the flashing lights. Powered by *technology*.

A minor flurry erupted when Duke Nukem Forever appeared for sale on Amazon.com. The site was taking pre-orders for a claimed December 2nd release. Only a day passed before 3D Realms were forced to make a statement denying the game was anywhere near completion. We'd have preferred to hear something we didn't already know.

scanner

industry and online news for the complete gaming enthusiast



Games and movies go together like popcorn and coke. We're not talking about movies *about* games, as much as we'd like to dwell on *The Last Starfighter*, or Brooke Shields' in *Tilt*. No, where the trend seems to be heading is movies *based on* games. Like the *Doom* movie, which has actually been out for years, it's called 'Aliens' and it's a billion times better than the try-hard actual *Doom* movie. But we support *Doom*, and as if we wouldn't, with The Rock packing a plasma rifle and the gutsy and thankfully successful filming of action sequences from the first-person perspective, complete with gun barrel poking out of the lower right hand corner of the screen. We want more of this. Now that gaming is comfortably

mainstream, it's not like Hollywood would miss a chance to jump on the gaming bandwagon.

Hollywood has, and the gaming bandwagon is riding low on its springs now that Mr Big himself, Peter Jackson, has signed on to Executive Produce a film based on Bungie's *Halo* universe. A *Halo* film has been in the works for some time now, but when Jackson put his name on it things went nutty. To say the *Halo* forums went ballistic at the news would be a gross understatement. Now, the *Halo* movie, which was previously considered a B-grade flick by movie insiders, is getting the spotlight bigtime and is already touted as a potential blockbuster.

Jackson claims to be a gamer - a *Halo*



gamer, he stresses, using the game to unwind after a hard day shooting *King Kong*. His wife and script co-collaborator Fran Walsh is working with Jackson on the project too, adding greater gloss to the *Halo* flick, which we are now looking forward to more than ever.

The gaming bandwagon is riding low on its springs now that Peter Jackson, has signed on to produce a Halo universe.

But before the dust had settled on the Jackson announcement, word was out that movie megasupremo Steven Spielberg had signed on with EA. Spielberg is to devise three game properties for EA to turn into games. Slightly odd that he's not actually designing a game, but if you're able to get a creative uberlegend like Spielberg on to think up characters and worlds, then you jolly well take it. And we're sure he's a busy man. Spielberg also claims to be a gamer – an EA gamer, in fact.

Atomic is just a little in awe of the talents now pushing game-movies. Whether it's Jackson making movies or Spielberg making games, we're into it, and we also think that The Rock as the Sarge in *Doom* is casting genius *El Grande*.



Spielberg and Jackson, sticking their fingers in new pies... well... virtual pies at least.

geekette

A girl's eye view of the gaming world



Princess Daphne enjoys the midday sun, taking a break from duelling alien hordes using the most powerful force in the universe – self interest.

If there is one thing that can make me completely lose my mind – OK, two things if you count *Rabies* – it is the death of my character. I've lost sleep, thrown things, even cried out of absolute frustration. Since the vast majority of games on the market involve some element of gameplay that requires an attempt to stay alive, it would appear I have a problem.

Yet my problem is not without a solution. Although I love to play, I don't necessarily play by the rules. One of the first things I do when I buy a game is search for the cheats and tips. No doubt if I didn't do this, it would be safe to assume that I would quickly learn to be a better fighter, but I wouldn't have nearly as much fun.

Scoff if you will, but it seems I'm not unique in my inability to leave well enough alone, hence the hysteria surrounding any source code release.

For those like myself who maintain a relatively thin grasp of survival, the appeal lies in potentially being able to make my enemies easier to kill, but

for the more hardcore the options are limitless. Using the code as a starting point, dedicated fans can make mods for different applications, create technology fixes to allow the game to be run on newer hardware, or go completely nuts and develop an entirely new game. There is also the opportunity for new developers or students to learn through the study of released source code.

The popularity of personalising games has not gone unnoticed by publishers who know which side their bread is buttered on. While reluctant to release the full source code straight away – for IP and competition reasons – they are providing the tools to modify their games along with tutorials on exactly how to do it. By doing this they enable users to customise their game, thus ensuring a long and healthy shelf life for their product.

Next time you see someone behaving oddly: hyperventilating, foaming at the mouth, eyes rolling wildly in their sockets and muttering incoherently, rest assured that it's unlikely they have contracted that nasty case of *Rabies*. More likely it is a reaction to the news that after a six year wait the source code for *Quake III* has finally been released and their mind is struggling to deal with the possibilities.

Kate Inghet is currently an *animatrix* at Atari Melbourne House. Prior to games development, Kate spent six years in advertising and short film. She studied at the AIE in Canberra where she is still involved as a mentor for the Women in Games Pathway, presenting regularly at conferences on the topic.



talking head

Logan tells you everything you really need to know about gaming

Memory loss

Logan Booker tries to squeeze into a small space.

Reading a review for Black and White 2 on IGN recently, I noticed attached to the bottom of the page – almost as if it was trying to hide from view – a user comment so depressing it made my brother's taste in party garments seem uplifting.

'Is 128MB enough?'

Unfortunately the answer is no. At least it is today. Grab a time machine and travel back to the days when Total Annihilation was the bomb, and geeks flocked in their tens to the local PC shop for a stick of 32MB RAM. With a static-bag of fresh volatile memory in hand, TA's massive multiplayer levels where just a PC case cover and a sliced digit away. Come the Core Contingency add-on and gamers everywhere were palming off their grandmother's hoard of pedigree chinchillas for a precious bar of 128MB memory.

So yes, six years ago 128MB was enough. Now, it's just laughable. Hence the question must be asked: Do games (and applications) need all this memory or have developers just become lazy?

Currently there are a number of titles on the market that agree with the latter choice. Battlefield 1942 and its sequel have a reputation for being insane system hogs. The recently released Battlefield 2 even managed to manifest a memory leak after being patched. Version 1.01 of the game crippled systems to such a degree it had to be hotfixed.

Boiling Point: Road to Hell had abysmal memory handling – among other problems – that resulted in a massive 75MB patch that didn't actually help fix the leak. Cue a second patch, weighing in at 200MB.

The massively multiplayer game City of Heroes reportedly has a bug that will cause a memory leak if a player zones (enters a new area) in and out frequently. This bug is still prevalent as I write this.

Memory leaks however are just bugs and as bad as they are, they can be fixed. The real problem is managing assets.

True, more powerful machines have opened the way for some hot looking games like Half-Life 2 and made fighting huge battles online in World of Warcraft and

other massively multiplayer online games possible. That doesn't mean these games have to abuse these resources.

The amount of RAM recommended to get the best performance out of a game has roughly doubled every 12 months – from 128MB in 1999, to 512MB in 2003 and finally 1GB this year. Next year it'll be 2GB. That's 2,147,483,648 bytes. We used to get by on a bit over 1/500ths of that 15 years ago. Why then do these games need 2GB? What could possibly be so big it forces your OS to attack the swapfile like a fruit bat on LSD molesting a crate of pears?

Textures baby – and lots of them.

A set of stats for a character takes up nothing. Vertices and polygon data can fit comfortably in your video card's onboard GDDR. The reason we need to spend cash on two sticks of 1GB RAM is so we can play games with pretty pictures. That's all. Not that pretty pictures are a bad thing, but it's insane to think that this one issue is why we need so much RAM in our machines.

Turn down the texture complexity in any game and you'll immediately notice a decrease in drive thrashing and a boost in performance. That's your swapfile taking a breather and pleading to God for the bad, nasty read/write head to go away.

To this day, chip vendors and API developers battle to make textures smaller. DXT1, DXT3, S3TC – and now 3DC for normal maps. All these texture compression formats are designed to do two things – increase quality by allowing more image data in the same space, and making that space smaller. Yes, they have an uphill battle, much like that kid with 128MB of RAM.

Until perfect arithmetic compression becomes reality I say to you, my memory-deprived friend, just stick with Total Annihilation.

Has Logan got a funny shaped head? Tell him now!
logan@atomicmpc.com.au



What could possibly be so big it forces your OS to attack the swapfile like a fruit bat on LSD molesting a crate of pears.

atomic LIVE2005

**THURSDAY
DECEMBER 8TH**

**STARTS
10am**

To do
list at... **atomic
LIVE2005**

- ☒ Be the first to experience Microsoft Visual Express. Official Australian launch at Atomic Live
- ☒ Be one of the first people in Australia to see and play the Xbox 360!
- ☒ Meet the famous Dr Karl Kruszelnicki and ask him anything!
- ☒ Play hard in the 2K Games PC gaming area with Serious Sam 2, Elder Scrolls IV: Oblivion and Vietcong on our 32-player network
- ☒ Kick on in the Xbox gaming lounge with Warriors on our 24 Xboxes
- ☒ See the hottest gear displayed by the world's top technology companies with PRIZE GIVEAWAYS from them all!
- ☒ Meet the Atomic team and see Australia's hottest Hot Boxes

**AUSTRALIA'S GREATEST
FREE TECH EXPO AND
GAMING EVENT**

Pre-registration is now

COMPULSORY

due to popular demand!

**WHEN THURSDAY DECEMBER 8TH
WHERE THE ENTERTAINMENT
QUARTER, BENT STREET COMPLEX
(FORMERLY FOX STUDIOS) SYDNEY**

For more information, visit

www.atomicmpc.com.au/atomiclive

Dr Karl Kruszelnicki appears by arrangement with Claxton Speakers International

PROUDLY SPONSORED BY



NVIDIA.



XBOX 360



We turn on ideas

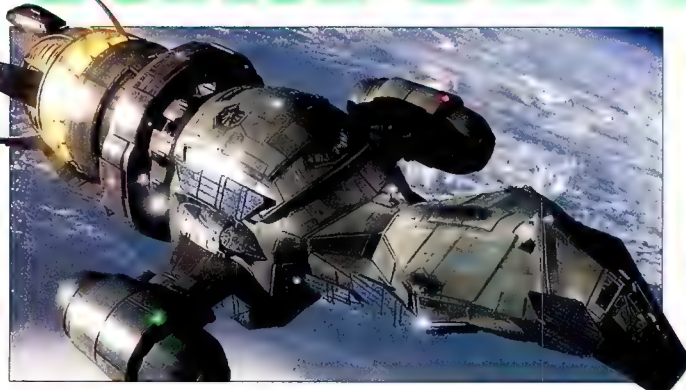


GIGABYTE™



culture shock

Everything you need to know about geek film, music and literature.



Serenity

CINEMA

Starring Nathan Fillion; Summer Glau Director Joss Whedon
Distributor Universal Pictures Website www.serenitymovie.com

The retooled pilot for Joss Whedon's TV sci-fi series *Firefly* does surprisingly well in cinema format. For those who are not familiar with Whedon's previous work, he's the guy that created *Buffy*, *Angel* and everything related. Yeah, him.

In *Firefly/Serenity*, Earth is uninhabited, the population forced to find another planetary system to live in. The human race has fractured, with the largest group forming the Alliance, a conglomerate of two superpowers, USA and China. The Alliance ends up kind of evil, in the same way communism is.

Whedon loves his heroines and *Serenity* keeps with this favouritism. The story revolves around River (Summer Glau), a girl with psychic powers and a knack for kicking the crap out of people. After being rescued from an Alliance science facility by her brother the pair escape to the outer reaches of known space and live in hiding with a bunch of mercenaries. The Alliance is angered to all buggery and inevitably comes looking for its stolen 'goods', much to the detriment of the oblivious mercs.

Although the cast appears well-equipped for the task of playing out Whedon's vision, their roles never seem to gel with the viewer. The best performances come from Nathan Fillion as Malcolm Reynolds and Summer Glau as River Tam. Alan Tudyk manages a subtle yet good performance as Wash, pilot extraordinaire, but no one really stands out as excellent.

The plot on the other hand is strong and will have you watching until the end. Government cover-ups, space-faring cannibals and innovative use of CGI put *Serenity* a step ahead of other recent science fiction movies. So, if you enjoy Whedon and his particular tastes, you can do no wrong by seeing *Serenity*.

LB SCORE 8.0 OUT OF 10



Nightwatch

CINEMA

Starring Nathan Fillion; Summer Glau Director Joss Whedon
Distributor Universal Pictures Website www.serenitymovie.com

Audiences brought up on popcorn cinema however will inevitably consign director Timur Bekmambetov's interpretation of Sergi Lukyanenko's novel to the *Star Wars* rip-off bin. The story works on the concept of 'others'; normal people who have awakened to their supernatural powers after experiencing a traumatic event. Once awakened, they must join either the Light or the Dark and forever keep the peace between the two sides. Although there's not a single Wookiee in sight, it's hard not to see the similarities.

Nightwatch follows the story of Anton Gorodetsky, a Light Other that can see into the future. After rescuing a boy from certain doom by killing a Dark Other vampire, Anton must protect the boy from further harm while keeping the Dark Others off his back. Ultimately Anton must face certain truths about himself and his past, truths that manifest in ways he could never imagine.

Unfortunately, nothing really happens in *Nightwatch*. All the incidental events in the movie become inconsequential once the final twist is made apparent. Some of the links during the build-up, like a Playstation game the head bad guy plays with alarming regularity, makes little sense in the end scenes. The nifty abilities of the Others are rarely seen – a girl with the power to transform into a tiger does so once, right at the start – leaving the viewer wanting for more but never receiving. Director Bekmambetov even manages to slip in a few lightsaber references, much to this reviewer's chagrin.

Nightwatch is the first in a series of three movies, with the others currently in production. Hopefully they won't be as lacklustre as the first outing, offering viewers something a little less *Star Wars* and a bit more meatier.

LB SCORE 5.5 OUT OF 10

criticscomer

DVD The Hitchhikers Guide to the Galaxy

Martin Freeman; Mos Def; Stephen Fry.

With a stellar cast (Sam Rockwell and Alan Rickman are outstanding), the biggest credit goes to the costume and set designers who have opted for live action models as opposed to CGI effects with fantastic results. Fun, exciting and adventurous... Mr Adams wouldn't want it any other way. **bc**



CINEMA Doom

Dwayne 'The Rock' Johnson;

Rosamund Pike.

Was there anything good about this movie? No. Not even the will of The Rock could save *Doom* from being anything other than bad. The mediocre acting, bad script, crappy monsters and poorly executed 'first-person view' firmly puts *Doom* in the same league as *Super Mario Brothers*. See something else. **LB**



GAMES Buzz: The Music Quiz

Website www.buzzthegame.com

Sony Computer Entertainment Europe Take some 3D graphics to facilitate the quizzing and smack a bucketload of trivia questions about music, all the way from Elvis to Britney Spears, and you have Buzz. Surprisingly, this little game is actually quite fun. Also features the voice of Jason Donovan, if that tickles your fancy. **LB**



THE 7TH ANNUAL

AUSTRALIAN GAME DEVELOPERS CONFERENCE



Conference & Expo: 1 – 3 December 2005 | Schools & Computer Games Summit: 30 November 2005

Federation Square and the Australian Centre for the Moving Image (ACMI), Melbourne, Australia

DEVELOPING DREAMS

AUSTRALIA'S LEADING GAME DEVELOPERS CONFERENCE

FEATURING

International guest speakers behind some of the world's most popular titles including:

- **WORLD OF WARCRAFT** BLIZZARD ENTERTAINMENT
- **HALO 2** BUNGIE STUDIOS
- **HALF-LIFE 2** VALVE SOFTWARE
- **NEVERWINTER NIGHTS** BIOWARE CORP

**REGISTER BEFORE
4 NOVEMBER
FOR GREAT EARLY
BIRD DISCOUNTS**

**FREE ENTRY
to AGDC Expo
2 – 3 December**



Ian Livingstone
Creative Director
Eidos, UK



Ray Muzyka
Joint CEO
Bioware Corp,
Canada



Chris Metzen
VP, Creative Development
Blizzard, USA



Rob Pardo
VP, Game Design
Blizzard, USA

Featuring Blizzard
Recruitment, Atomic
Magazine, Intel and
many more...

www.agdc.com.au

Organised by  ie
events

Premier AGDC Sponsor



Fatal1ty Chooses...

Xtreme Fidelity

Sound
BLASTER

X-RAM
64MB



FATAL1TY



A Breakthrough Audio Platform
Delivering the New Xtreme Fidelity Standard

- XTREME FIDELITY GAMES • XTREME FIDELITY MP3 MUSIC
- XTREME FIDELITY MOVIES • XTREME FIDELITY MUSIC CREATION

Johnathan "Fatal1ty" Wendel

WWW.FATAL1TY.COM



WWW.AU.CREATIVE.COM

CREATIVE

pipe

Your complete game plan for a
super fun filled future.

Release date: February 2006



V8 Supercars 3

We did a teeny little preview of this a couple of issues ago, but since then Codemasters has sent us a newer beta version that's almost complete, so we're sharing the experience with you. And it is a good experience.

The meat of the game, thankfully, stacks up. We were a little concerned that Codemasters would release another generic driving model that was neither sim or arcade, as was the case with V8 S2. The new game is great to drive! It's a huge improvement over previous Codies racing games and is up there with true sims like GTR. Two driving models are on offer, standard and Pro Sim. The later really isn't much different from the standard model, just a little touchier on the gas and tends to break its grip quicker. We experimented with both models across all cars offered and found handling across the board to be almost as good as GTR! The V8s in particular are the best we've driven in a sim, and are extremely satisfying to drive. It's also apparent that Codie's has taken the time to properly differentiate between the Falcon and Commodore. Each Supercar is distinctly different, with the Ford featuring refined and predictable handling, and the Holden being a toey, skittish creature.

While the beta didn't have all cars ready, it did let us play the Euro DTM series and the Mercs and Audis were perfectly suited to close combat racing. We do like a racing sim that manages to make us feel like total pros. The DTMs are like that, and so are the V8s. Online and network racing is going to rock and we hope and pray that the netcode has been binned and replaced since the last game, which sucked horribly for online play.

Enemy AI is threatening and scary. There's a slider for just how agro you want them to be, but even on gummy level the AI drivers hound you and make aggressive passing moves which half the time leads to major stacks. Just what we like to see in an AI driver!

Another highlight is the Euro GTR league, with Ferrari 360s, Lambos and 911s, another perfect multiplayer series. Also noteworthy is the force feedback effects. We're not fans of force feedback and its usual shoddy implementation, but in V8 Supercars 3 it feels just right and is a genuine driving aid. The lasting impression we have is that this game is a generational leap for Codemasters. It's great fun, not too easy but not too hard, and offers enough awesome cars to see us through the 2006 racing season in style. Next – the review!

Publisher **Atari** Developer **Codemasters** Platform **PC, Xbox, PS2**



Release date: TBA 2006

Alone in the Dark

Being old, and having grown up through the birth of computer gaming, we were especially gladdened to hear that Alone in the Dark is coming to Xbox 360. When a new gaming platform launches the games tend to be safe'n'sterile mainstream cabbage water. Maddens and Tony Hawks and Ridge Racers. Just look at the PSP's riskless launch titles. Bucking that in the face is Eden Games' Alone in the Dark.

This series harks back to 386 days, and used the first polygons we ever saw. Eden has been secretive with the detail, apart from PR rhetoric like '... deliver a visceral and gripping experience that will establish the Alone in the Dark franchise as the leader of the next generation survival genre...'.

Alone in the Dark has always been a zombie fight, and the screenies we were sent show that the Xbox 360 is indeed capable of rendering zombies in gore-rich detail. Eden is also claiming that its new game has 'environmental interaction', which we choose to take to mean that you can tear a door from its hinges and use it to smash a zombie's skull into a normal-mapped river of undead pus, which eats through floorboards and environmentally affects the lady taking a bath in the unit below. More real info as it comes in.

Publisher: **Atari**
Developer: **Eden Games**
Platform: **Xbox 360**



Release date: TBA 2006

Titan Quest

Brian Sullivan has cred. He was co-creator of Age of Empires and helped build Ensemble Studios. Not bad at all. Now he's broken away and is forging a new legend. Brian's Titan Quest is looking very much like Diablo: The Next Generation. With billions the world over living and loving WoW, the time is surely right for a top quality RPG-lite. Brian and his new company Iron Lore have worked to create a game that balances the fast clicky killy fun we know and love with a single-player world that compares in size to some online MMORPGs. Set in ancient Greece and Egypt it's a nice change from the norm too, as the screenshots show excellent detail.

Like the recent but lacklustre Dungeon Siege 2, Titan Quest has achieved seamless loading and transitioning between areas. This feat works well with RPGs and the relatively slow movement between areas, but we still live in hope that more games will figure out the tricks needed to get rid of the loading screen once and for all.

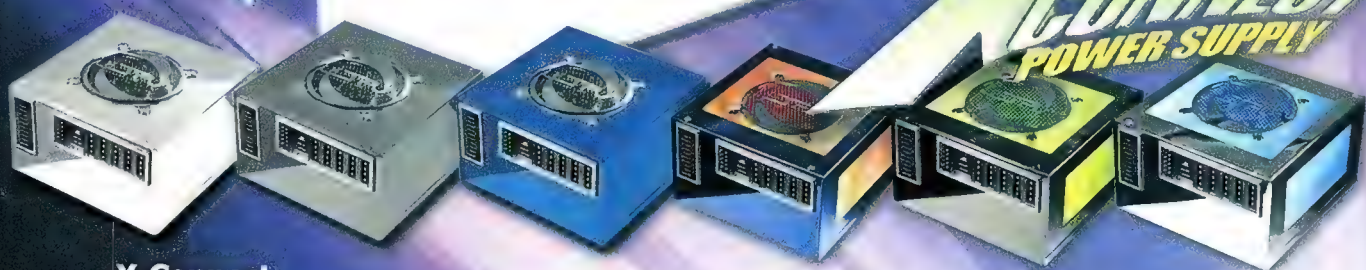
We're looking forward to the good fun game Titan Quest looks to be, without being encumbered by bothersome RPG elements like endless quests and convoluted character development. Titan Quest is simple but gorgeous action, just like Age of Empires.

Publisher: **THQ**
Developer: **Iron Lore**
Platform: <http://thq.com.au/>



ULTRA

Forget Everything You Know About Power Supplies...



Award-Winning
CONNECT
POWER SUPPLY

X-Connect

The World's First Fully Modular Power Supply. Custom-Configure The Cables The Way You Want!

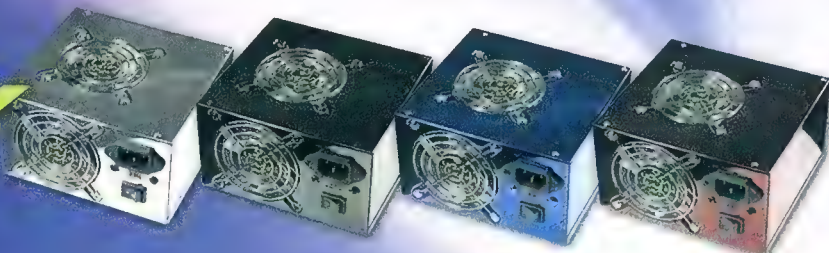
- High-Gloss Mirror Finish
- Modular Cable Technology
- UV Reactive Shielded Cables
- Dual 80mm Fans

All New From Ultra...



X-Finity

The High-Performance, Hardwired Power Supply, High-Gloss Finish.



- Dual 80mm Fans
- Two SATA Power Connectors
- 20-24 Pin Motherboard Power Adapter

For Further Info Please visit www.ultraproducts.com or contact your nearest premium Ultra reseller

VIC

Scorpion Technology www.scorptec.com.au Phone : 1300 726 770

PC Case Gear www.pccasegear.com.au Phone : 03 9584 7266

MegaPC www.megapc.com.au Phone : 03 9793 9676

Custom Cases www.customcases.com.au Phone : 03 9327 8494

NSW

ARC COMPUTERS www.arc.com.au Phone : 02 9748 8322

SA

David & Karma's PC Cooling Gear Phone: (08) 8278 3457

Email: dkeagost@senet.com.au <http://www.davidandkarma.com.au/>

Photech Computers Pty Ltd Ph: 08 8349 4334 www.photech.com.au

QLD

Quick Solve Computers www.quicksolve.com.au Phone : 07 3804 7400

L33TMODDERS.COM www.l33tmodders.com Email : matt@l33tmodders.com

This device is protected by the following patents: China Patent No. ZL200420008943.0 Taiwan Patent No. 56525 One or more pending U.S. patent applications

Mighty

Logan Booker clashes swords with Arkane Studios' Romain De Waubert De Genlis over Dark Messiah: Might and Magic.

Spanning 19 years and nine chapters, few games have a history quite as opulent as Might and Magic. Birthed in 1986 by the mind of New World Computing's Jon Van Caneghem, it did not take long for the series to become a landmark in the CRPG landscape. Players all over the world would embark on the arduous quest to chase down the rampaging guardian Sheltem, a quest that would last five entire games, only to find themselves in the middle of a 900-year war – and at the start of a new adventure – at the conclusion of Might and Magic 5: Dark Side of Xeen.

Unfortunately, the series ended in an unspectacular fashion in 2002 with the ninth tale, Writ of Fate. Regarded by most fans as the weakest title in the M&M stable, it left many wanting for more.

Now, in 2005, Arkane Studios, best known for the RPG *Arx Fatalis*, has picked up the long since extinguished torch of the M&M universe and set it ablaze again, with *Dark Messiah: Might and Magic*, a stunning refresh of the once mighty series.

Whole new world

Although *Dark Messiah* takes place in the M&M universe, it's not the universe most will remember. Arkane Studios, adamant on bringing something new to the fore, has recreated the world of Might and Magic with a fresh outlook that more suits the FPS/RPG nature of the game. With two years of development under its belt and a new and rejuvenated universe, *Dark Messiah* has much for players to delve into.

'The game really uses the new roots of the

Might and Magic universe. As you know, since Ubisoft acquired the brand we have completely recreated the universe,' explains Romain De Waubert De Genlis, the game's producer.

According to De Genlis, *Dark Messiah* takes place on Ashan, a world with a dark history forged by a great battle between man and demon. Lasting over a thousand years, the 'Wars of Fire' finally ended with the sacrifice of the great mag Elam, the Seventh Dragon. Using his great power, Sar-Elam imprisoned the leader of their enemy, the Demon Sovereign, in a cage made from his spirit. Sar-Elam however was betrayed by his student Sar-Shazar, who tainted the imprisoning ritual with a flaw that would allow the Sovereign to escape when the time was right. Sar-Shazar prophesised that one would be born that would



You can't get much work done in a game without some quality concept art. Above and to the right you can see a few of the locations you'll visit in your journey through the game; from dark manors to open seas, there's plenty to explore.

Magic

engine room

be able to destroy the cage. And so, the Sovereign has waited for his would-be saviour.

It should come as a surprise then that the saviour may very well be the player.

You play as Sareth, apprentice of the wizard Phennig. He raised you for a single purpose, training you in the arts of magic and war,' says De Genlis.

At the beginning of the game you are sent by your master to the nearby town of Stonehelm to find an artefact linked with the prophecy of the Demon Messiah.

But, of course, your mission will be a sinuous journey, filled with unexpected encounters and revelations.

Swords and sorcery

De Genlis admits that the game is based on engaging FPS combat. Departing from previous Might and Magic games where the focus was on the role-playing aspects, Dark Messiah will be a first-person spell-casting hack and slash, with

character development elements completely integrated rather than 'being' the game.

'[Fighting] is the heart of the game and we really give a lot of attention to that. Combat will completely be performed in real time, so you will manipulate your weapons. Using the mouse and keyboard controls you will be able to dodge, parry, attack in different ways (fast attack, side attack, frontal hit). You will have to manage speed, timing and also targeting as there will be localised damage on enemies' bodies,' says De Genlis.

As with any RPG, defeating enemies garners you experience points that give you access to new skills, equipment and better stats, however, character development is driven by the first-person combat. So, while the speed and power of your blows and spells is stat-important, your ability to hit targets, and do so strategically, is up



Although the game doesn't feature a huge number of levels, the size (and detail) of each more than compensates for this.

to you. As you progress further into the game and gain experience, you'll be able to perform deadly combos and critical hits.

De Genlis explains that combat in Dark Messiah is all about doing what you want. 'You will have the freedom to choose how to fight. There will be less exploration in the game, as we wanted to keep our focus on the combat gameplay and story.'

'We have a very deep freedom in gameplay, meaning you will have a lot of actions and weapons at your disposal to combat your enemies. Moreover, depending on the place you are and the objects around you, a specific weapon or spell could be more appropriate but it will always be up to you to choose how to face your enemy,' says De Genlis.

The force of Source

It's no secret that Dark Messiah is being developed on Valve's Source engine, the same platform that powered Valve's own Half-Life 2. Originally, Arkane Studios had its own proprietary engine from its previous title Ars Fatalis that it was considering for the game.

'Back in may 2003, we saw the Source engine demo at E3 and we were stunned by the fantastic graphics, physics and character animations. We were just about to develop our second iteration of our own engine when we realised that it could be a good idea to contact Valve and check out a licensing opportunity with them,' explains De Genlis.

Valve was more than happy to give Arkane access to the engine and as a result, the Dark Messiah team was one of the first developers to create a game using the technology. Arkane was particularly impressed with the Havok physics engine integrated 'at all levels of the code'.



Hero time

Dark Messiah isn't the only Might and Magic game currently in development at Ubisoft. Nirval Interactive, best known for the Silent Storm series, is working away at Heroes of Might and Magic 5, a turn-based strategy based in the M&M universe. We asked Arkane Studios if the development of HOM&M5 had influenced Dark Messiah at all.

'No, not really,' was the reply from producer Romain De Waubert De Genlis. 'Both games are very different ... we took care to make both games consistent on that [the M&M universe] level. As a result, the stories of Heroes V and Dark Messiah are linked. On top of that

the background is the same for both games, meaning that you may encounter the same races, beliefs, history, [etc].'

Previous M&M and HOM&M titles have been linked together also, sharing more than just similar characters. HOM&Ms 1, 2 and 3 are related story-wise to M&M 6, so fans of either series did well to play both flavours of game.

Not only did they follow (or learn of) the story of the world of Enroth, Lord Ironfist and his sons in HOM&M or that of Sheltem in M&M, they also discovered a different genre of game.

'We also found the engine extremely flexible, open, and handy for fast prototyping of complex features such as first-person melee combat that involves physics, animations on multiple layers and advanced AI behaviours,' explains De Genlis.

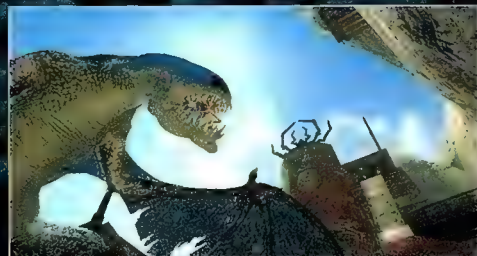
It goes without saying that they were also blown away by the powerful shader effects and the opportunities for added realism they provided. While the team is aiming for system requirements similar to Half-Life 2, De Genlis admits that it may demand more grunt '...due to

the integration of latest technologies in the engine.'

'I like to think that our relationship with Valve goes beyond a simple license deal. We share the same passion for games and we like to exchange ideas and show Valve our progress, and listen to their feedback,' he says.

Colour of magic

According to the Dark Messiah website, the game is using an enhanced version of the Source



If Arkane Studios says it's using an enhanced version of the Source engine, we can't help but believe it's true. The screenshots are proof enough.

'At some point during our development, we realised that for some of our features, there was no existing reference. I believe it is then that Dark Messiah became unique.'

engine – easy to believe once you check out the unbelievably gorgeous screenshots.

The lifelike realism allowed by the Source engine helps us create this suspension of disbelief. In the game you will face creatures that [are] so beautifully rendered that you might feel like they could really exist,' says De Genlis.

The first person perspective also helps greatly with the immersion, and immersion has been an important goal for Arkane Studios.

'For the development team the challenge is to make the world as realistic as possible by introducing elements that will seem familiar and cohesive to the player. The environment also has to be more detailed.'

'When you enter a house for instance, you should feel like somebody actually lives there,' says De Genlis. For this reason, he believes Dark Messiah will stand out from other first person shooters and RPGs. De Genlis admits that the game borrows from several genres, but feels that the final mix of elements will be come across as unique.

'When you develop a game, you often reason about features in terms of –like (having 'Half-Life 2 –like' physics, for instance). At some point during our development, we realised that for some of our features, there was no existing reference. I believe it is then that Dark Messiah became unique,' he says.

'To be more precise, I strongly believe that people will be impressed by the challenging first person melee combat system, the seamlessly integrated physics, the vivid Might and Magic universe, among other features.'

De Genlis is comfortable with the Source engine and believes it was the best choice for the game. It has provided the team with powerful tools to immerse the player and bring the action – which is the core of the game – to the next level. De Genlis credits the storytelling components of the engine for allowing Arkane to create the best FPS/RPG experience possible.

'On top of that, the beautiful graphics allow us to render a fantasy environment in a most

realistic way. We want the player to feel inside the universe,' says De Genlis.

Dark portents

Dark Messiah: Might and Magic will be a PC only title, so if you haven't got a decent computer for some reason, this will be the game that will make you upgrade. De Genlis cites the intense development of the title for the limited choice of platform, not wanting to 'scatter our efforts'. Currently, the game is aiming for a summer 2006 release in the US, which is around mid 2006 for us. It's 12 months or so to wait, but looking at the screenshots and the promise of more from the once beloved Might and Magic universe, 12 months is nothing.

'I think that each day we have a clearer idea of what we're aiming at, and this is really motivating for the whole team. On top of that the excellent feedback we got after the announcement comforted us on the fact that our initial choice [of engine subject matter] was the right one,' says De Genlis.



It's not black and white at all. It is muddled shades of gray, all spaghetti'd together in a tangle of design concepts. At first you'll start playing thinking you know what to expect, then you'll likely be disappointed when you can't make a clear connection between your actions in the game and their consequences. Then you'll persevere, playing the game in its raw form as a very decent 'little people in towns, a la Settlers' kind of game, and it's then that things start to fall into place and the true nature of Black & White 2 materialises on your gaming screen, and you start to dig deeper and like what you find.

Molyneux the guru has worked ever so hard

to disguise game styles and elements we are all familiar with, creating a game which (I'm sure he'd like) could be described as a revolutionary fusion of what is old and new.

But boil all the fat away and what you have at the heart of Black & White 2 is an RTS with an emphasis on city building, and a Tamagotchi thrown in for good measure. It is best to pretend the original Black & White never happened, if you want to cut a couple of days off getting your head around this game. Trying to identify common elements between the two games and make sense of the way they evolved in the new game will only do your head in.

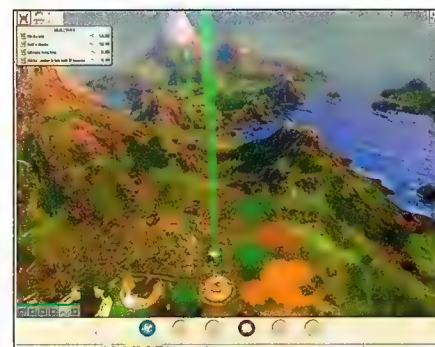


I've spent about 10 days straight playing Black & White 2, and I've never felt more reluctant to write a review. Each time I play it feels like a different game, and surfing forums only makes it worse, as everyone seems to have a different experience. So, I'll say now that I don't feel that I understand even a fraction of the game I am reviewing, but I'll also say that a game that is able to impart that feeling – and keep me coming back for more has to be special.

At its core Black & White 2 is two games. They exist side by side but almost independently. Only as the game progresses do they grow together and when they do, the game's complexity, satisfaction and greatness grows exponentially. The first is a Settlers-style little people game, the other is a Tamagotchi-Ultra game, being the creature.

As you play, each mission puts you on a new island, rendered beautifully, with a few homeless natives down one end, and a horde of AI baddies with an established base at the other. You are God, and it's not your job to do mundane things like building houses or mining ore. So you order construction and resource gathering and the little people take care of it – in practice. In reality you'll be busy doing as many mundane things as possible, because your people are too slow at it, and helping out earns you points that keep everyone happy and can be spent upgrading the list of things you can build. Everything is straightforward and unsurprising. Limited resources must be used wisely, town planning is as important as ever in these games (got to keep the street traffic flowing efficiently) and unhappy citizens are appeased by plonking a pub or temple in the neighborhood. If things are going well the sky is sunny blue and the grass lush and green. If unhappiness takes hold however, expect the skies to become black and your pastures to turn to lava. This is the 'black and white' of the game, choosing your side and sticking to it.

And that's where it becomes tricky. Playing as an evil bastard is dead easy, being good is unbelievably difficult. To complete the game you must take over enemy or unaligned cities on the island, but raising even the smallest army will send your population into miserable depression,



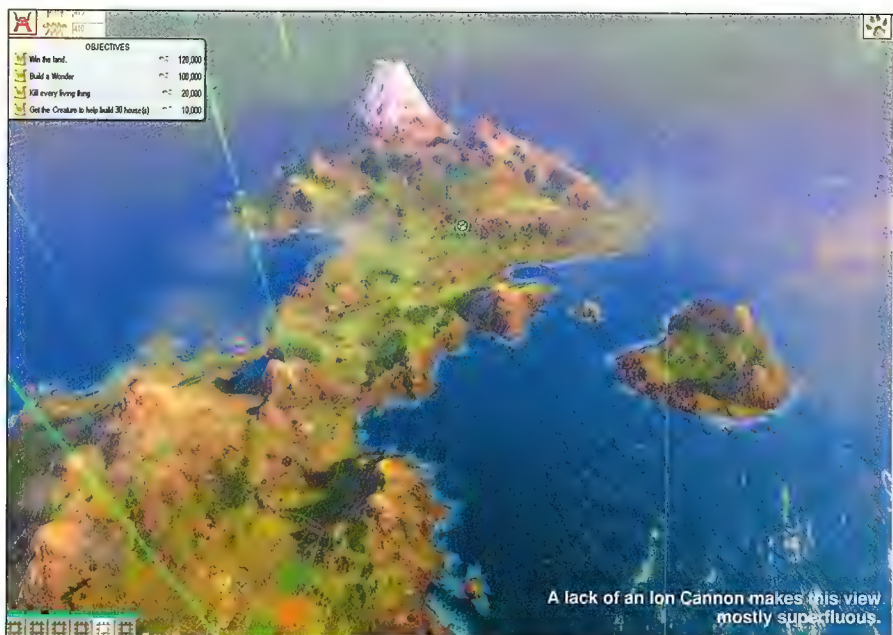


compounded as soon as the army starts whacking off enemies. One or two little wars and your entire nation is dark and your people wailing. Fine if that's how you like it. Playing as evil shortens the game hours and turns it into a tank rush game, as it's dead easy to take over most towns by force.

But keeping things sunny is the way it should be played. The caper is to build a magnificent, happy town, and sit back. Eventually the good influence will spread and neighboring towns will join your alliance. Avoiding war is key. If you do get attacked it's wise to have good strong city walls that'll hold out long enough for you to use godly powers to destroy bad guys, or have your creature fight the fights. Played this way, the game has a pleasing pace, allowing you to go about being God to the villagers and developing your creature.

Creature training is a black art. You can teach it to do pretty much anything the game world will allow, which is a lot more than I've uncovered. Eventually your creature will evolve to be a very handy one-thing army, and does a good job of collecting resources and building things for the town. It's all too easy to get preoccupied with creature training, but the game pace allows it and surfing B&W2 forums will let you discover some seriously whacked things people have figured out.

Black & White 2's big appeal is that it is a bottomless pit of neat new things to discover. Molyneux purposely made the documentation and tutorials scant and ambiguous, you are a God and you have been given a land and people to be a God to, so go ahead and God it up, baby, this game is the tools and the template!



A lack of an Ion Cannon makes this view mostly superfluous.



Lionhead
Electronic Arts
www.lionhead.com/bw2

P4 1.6GHz or equivalent; 512MB
RAM; 64MB video card.

VERDICT

Cool and tricky creature moves; beautiful game world; endless things to discover. ✓

Annoying mouse cursor; you'll want to restart every time you figure out something new. ✗

score
8.0
OUT OF 10



but it's never overwhelming. The Civlopedia screen in particular is a beauty. Mousing over the grid of pretty icons tells you just what you need without needing to drill in deeper. Indeed, mouseover anything in the game and it tells you all you need, like terrain on the game world, you'll see the resource type, what improvement is needed to exploit it and any unit info. Lovely.

All up, every bit of the game both looks beautiful and conveys information in an easily digestible manner, letting you play this

**They have
taken a
masterpiece
and given it
perfection.
Bravo!**

If you hold fond memories of playing the original Civ, or Civ 2 if you came in late, then oh boy are you going to love Civ 4. While Call to Power and Civ 3 tried to build upon the essence of the fundamental game with radical new gameplay elements, Civ 4 is very much the original Civ, but with the benefits of new technology, a big budget and a big team, and hindsight.

There's nothing gimmicky about Civ 4. Nothing was done for razzle dazzle effect. The game is pure and refined and beautiful. While there have been some major revisions to the way things work, they fit in perfectly with the essence of the Civ theme. Playing Civ 4 is both a glorious return to the game we love, and a joyous discovery of the new things that just work perfectly.

The big change is that the entire gameworld is rendered in 3D. Fear not, Civ still feels exactly like a 2D strategy game. The 3D doesn't take anything away from the feel – rather it expands on the way you play, giving you power and flexibility over how you absorb information about your world. Zooming in and out is just a flick of the scroll wheel. It's fast and smooth. Zoom about halfway out and you're at the cloud layer, it's the perfect perspective for getting a big picture, and the city tags always scale so you've got key info always there. Zoom all the way out and you'll see that your map is actually a globe, and you can rotate it. Marvellous. Zoom all the way in and wow! Everything you do in the game is visible, as cities grow they do so visibly, with each new building and wonder right there before your eyes in 3D. Terrain features are rendered perfectly too,

so at an instant glance you know what's around and how best to exploit it. Units are animated and in pretty good detail too. Air units fly over cities, soldiers shuffle around ready to battle, and when battle happens the animation is superb. Little tanks shooting off rounds, archers drawing back and firing, horsemen taking a hit and flying off backwards. It all adds immense satisfaction to play, but never for a moment feels like mere eye candy. It adds greatly to the perception of your world, which has transcended stats and lists. You can now see exactly what you've got and play it accordingly.

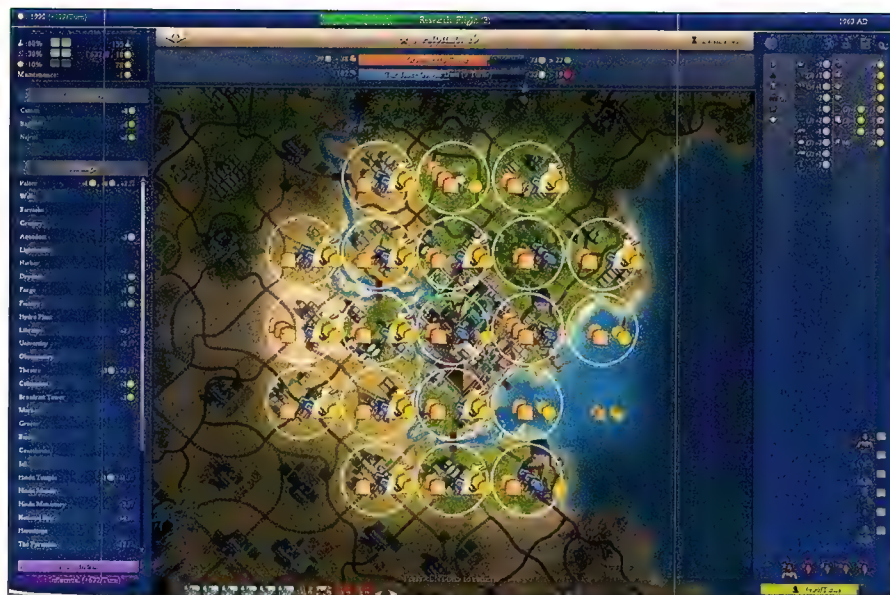
The interface too is almost flawless. Each screen presents its info with enormous depth,

immensely complex game without ever clouding the big picture.

The game mechanics have been nicely refined, expanding logically upon the Civ premise. In combat your units now have special bonuses. Archers, for example will have a first strike ability, while axemen will have melee advantages. Machine gunners will have city defence bonuses, catapults and artillery will now damage every unit in a stack. And after a successful battle the victorious units will be promoted, adding to their strength and your desire to plan their use with more care.

Government and religion get the biggest gameplay makeovers. Government is no longer





just a blanket one system rule. There are five government categories: Government, Religion, Law, Labor and Economy. Within each of those there are five possible advancements. This lets you customise to suit your needs at the time, whether it be war, expansion or growth.

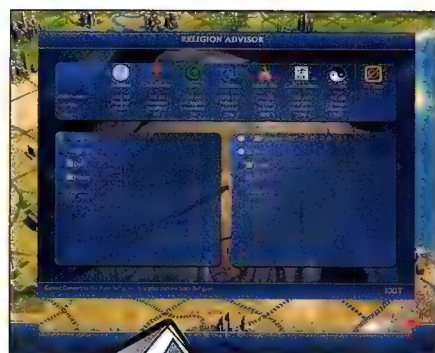
Religion has been given a major emphasis, and much like the real thing you can either ignore it completely or dive right in. The first religious system you research will become your 'state religion', but as you build new cities their adopted religion may not be the official one, and a city may have more than one religion. You can run a state with several religions and the degree of national harmony depends upon what government type you are running, and the type of religious buildings in each city. If you want a clean one-state, one-religion system, you can build missionaries to help convert wayward cities.

Prudently, the game designers have not given any one religion a superior advantage over another.

The beauty of all Civ games is their 'blank canvas' flexibility. Moreso than ever, you can play Civ 4 any way you want. The number of permutations for starting a game is extremely deep. The usual geography options are there as well as options for interesting victory conditions, such as a diplomatic win where you're gunning to be elected head of the UN and vote on policy decisions that effect the entire game world.

I can't recommend Civ enough, and I've only scraped the surface here of what this game offers. It is almost infinitely deep, yet the complexity never ever clouds the control and comprehension of the world you are building. There's years worth of quality gaming here.

They have taken a masterpiece and given it perfection. Bravo!



PC

Distributed by **Firaxis Games**
 Publisher: **2K Games**
 Website: www.2kgames.com/civ4

Recommended:
1GHz CPU; 256MB RAM; 32MB DX9c graphics;

VERDICT

Finesse and harmony of design; infinite replayability; beautiful graphics and music; perfect interface and menus; clever multiplayer options.

Nothing

score **10** OUT OF 10

FROM THE EXECUTIVE PRODUCER OF HALO®

STUBBS™ THE ZOMBIE

IN
Rebel Without a Pulse™

**LIVE LIKE YOU'RE
ALREADY DEAD.**

Somewhere in Punchbowl, "City of the Future" the object of your revenge awaits. The only thing standing in your way is the living.

BE THE ZOMBIE.

**BUILT WITH THE
HALO® ENGINE**



EAT BRAINS: Convert the living into undead allies & build your zombie horde.



POSSESS THE LIVING: Clamp your severed hand on the living & use any of their weapons.

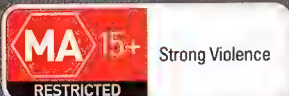
PLUS: Use your body as a weapon with gut grenades, unholy flatulence & more!

PLAY CO-OP: On the Xbox and double the damage with a friend. (Friend not included)

**LURCHING INTO
STORES 25 NOVEMBER**
STUBBSTHEZOMBIE.COM



Also Coming Soon:
Stubbs the Zombie: The Soundtrack
www.shoutfactory.com



Developed by Wideload Games, Inc. ©2005 Wideload Games, Inc. Portions ©2005 Aspyr Media, Inc. Aspyr® is a registered trademark of Aspyr Media, Inc., and the Aspyr star logo is a trademark of Aspyr Media, Inc. Stubbs™, Stubbs the Zombie™, Rebel Without a Pulse™ and Be the Zombie™ are trademarks of Wideload Games, Inc. under exclusive license to Aspyr Media, Inc. PC/DVD-ROM logo TM and ©EWA 2004. The NVIDIA logo and the "The way it's meant to be played" logo are registered trademarks or trademarks of NVIDIA Corporation. The ratings icon is a registered trademark of the Entertainment Software Association. All rights reserved. All other trademarks and trade names are the property of their respective owners. Microsoft, Halo, Xbox and the Xbox logos are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

While impressive, screenshots don't do Quake 4's lighting justice. It is, simply, astounding!

Quake 4

Ben Mansill can't believe that every new game in the last month is the best game ever. Here's the latest.

Bringing together Carmack's Doom 3 engine and Raven's stellar design reputation, expectations were high for this game. But I don't think many people expected Quake 4 to be anywhere near as amazing as it has turned out to be.

This is a run and gun space marine shooter, par excellence. Raven has shown yet again that it knows its craft better than almost anyone.

The level design is superb. Linear, but always fresh and exciting. The alien Strogg base is a huge industrial facility and Raven have done a convincing job. Everywhere you turn there is huge clanking machinery, massive hydraulic pumps, towering plasma power generators. The animation is just astounding and the detail astonishing. Everywhere things snap, crackle and pop. The sense of scale too is awesome. If you have a bitchin' fast system, this is the game to show off what it can do. There's simply not a better looking game on the market today.

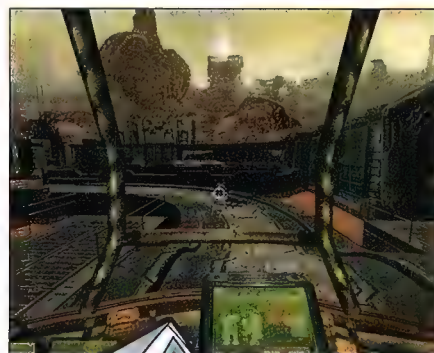
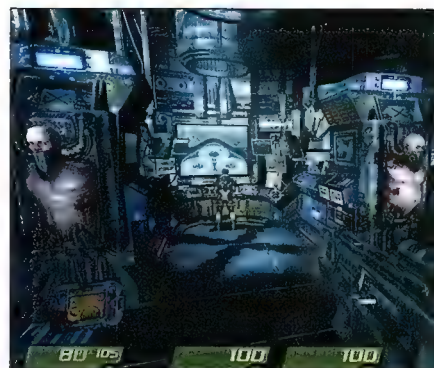
This is a Quake game, of that you're never in doubt. Progressing through the game you'll uncover the true nature of the Strogg and their wicked human experiments. Think of the most disgusting things a machine can do to a human body, then watch stunned as Raven's designers 10x that. Quake 4 is truly gross and it's easy to develop an emotional desire to waste the Strogg. I'm amazed it passed as an MA15, but let's keep quiet about that, eh.

New for this Quake is a cast of dozens. The characters are as good as the best human animation in any game. Even the lip syncing is almost perfect, and there's just so much acting you'll feel like you're in the movie *Aliens*. The game wraps you up and sucks you into the story, which is formulaic but done with style and finesse.

Your space marine buddies will go to battle with you, and do a great job of it. No matter how many marines are in a firefight, they never get in your way and handle themselves effectively. On some levels it is unfortunately possible to just stay back out of trouble and let them play the game for you. Mostly though, you'll be looking out for them, as you'll very much want to keep your tech and medic alive so they can regenerate your health and shields.

Every little corner of Quake 4 is impressive, but the sound in particular is just sensational. Whether being enveloped by the environmental hissing and humming of the industrial environment, or the crisp clatter of gunfire, Quake 4's enveloping cacophony of super fidelity is of supreme quality.

And so is everything in Quake 4. It looks glorious, sounds tremendous and plays beautifully. The game feels like a movie come to life, with you in the middle.



Raven Software
Activation
<http://quake4.ravengames.com>

2GHz P4 or equiv; Athlon; 512MB
RAM; 64MB DX9 graphics.

VERDICT

Incredible architecture;
super-detailed design;
wicked audio.



Can't turn off the music or
adjust its volume, sometimes
it drowns out your orders.



score

9.0
OUT OF 10

SID MEIER'S CIVILIZATION®

CHANGE THE FACE OF
ANCIENT EGYPT.

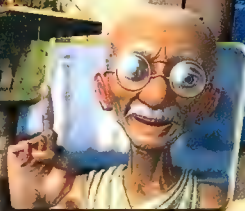
200 BC

216 AD

1468

1894

1945



- **OVERHAULED INTERFACE:** RTS style, intuitive interface gives you greater unit and city control at faster speed.
- **3D LIVING WORLD:** Elaborate, detailed environment set in a vibrant and colorful world.
- **NEW FEATURES:** Introducing religion, Holy Cities, missionaries, Great People, variable scale games and loads of new civic options.

- **A MODDER'S DREAM:** An unprecedented level of modding power including: World builder editor, XML, Python Scripting Language, and coming soon: The Civilization IV SDK - mod the A.I. to meet your vision.
- **MULTIPLAYER:** Built from the ground up with Era starts, variable game speeds, hot join, team play and a bevy of connectivity options (LAN, internet, PBEM, hot seat and more).

PG

Mild Themes,
Mild Violence

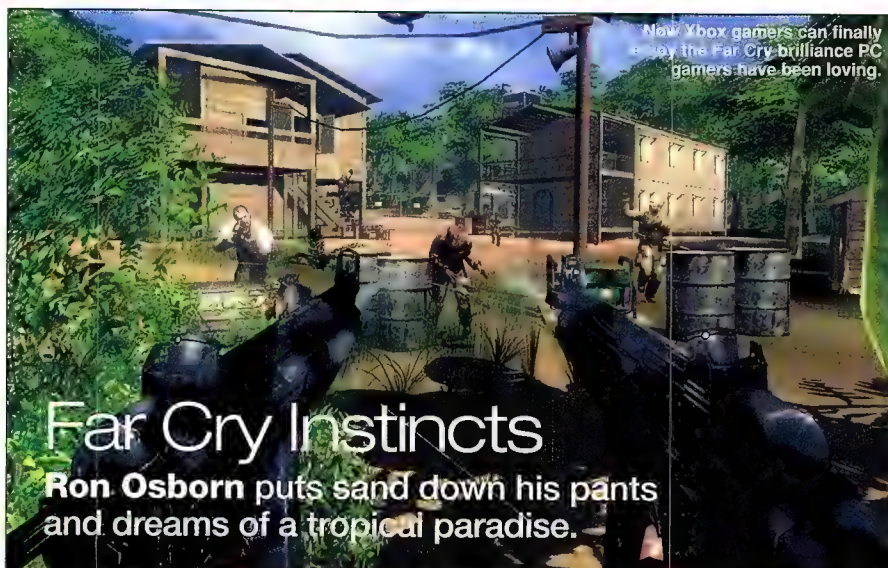
PC
DVD-ROM
SOFTWARE

www.CivIV.com

FIRAXIS
GAMES

2K
GAMES

© 2005 Take-Two Interactive Software and its subsidiaries. All rights reserved. Sid Meier's Civilization IV, Civ, Civilization, 2K Games, the 2K Games logo, and Take-Two Interactive Software are all trademarks and/or registered trademarks of Take-Two Interactive Software, Inc. Developed by Firaxis Games. Firaxis Games is a trademark of Firaxis Games, Inc.



New Xbox gamers can finally enjoy the Far Cry brilliance PC gamers have been loving.

Far Cry Instincts

Ron Osborn puts sand down his pants and dreams of a tropical paradise.

Often a port of a popular game loses something in translation. Even if the levels, graphics and sounds are exactly the same, it often doesn't feel quite right. With Far Cry Instincts, it's as if Ubisoft took the feel of the original Far Cry and wrapped it up in an entirely new game, which is – dare I say, even more fun than the original.

The graphics in Far Cry Instincts are nothing short of breathtaking and will drop your jaw in much the same way as Far Cry did on the PC a little over a year and a half ago – lush vegetation, blinding sunlight and water that you just want to dive into.

Instincts plays much like a combination between Goldeneye and Half-Life 2. The scripted vehicle chase sequences in particular have a very HL2 feel about them. Though the levels are slightly more linear than the original PC game, this is compensated by a more involving story.

Let's be honest, the mutated monkeys from the PC game were quite lame. In Instincts, you're the test subject for the mad science experiments. As you progress you gain access to some rather impressive 'feral' abilities that will let you track enemies, break down doors, cross mighty rivers in a single bound and generally go all X-men on the arses of anyone that gets in your way.

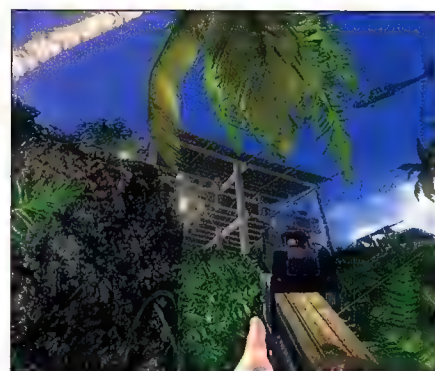
And there will be a lot in your way. The mercenary business is booming and it seems there are always a handful of enemies waiting to pounce on you around the next corner. Guerilla tactics are your friend – crawl underneath a hut and shoot at the occupants from between the gaps

in the floor; or turn a tree into a mantrap and thin out the enemy numbers MacGyver style.

Though the environment does have destructible components, these can be a hit and miss affair. The game is quite picky about how these elements are destroyed. Your super-human strength can tear open solid steel doors, however a wire-mesh fence will only succumb to the gentle caress of your four-wheeler pushbike.

Despite this slight blemish, Instincts will have you enthralled and you'll always want to find out what's around the next corner of the game's expansive levels. Combined with some brutally difficult sections, this is one game that you're not going to finish in a hurry. Even if you do there are still the map editor and multiplayer modes to play with.

It's not so much that Far Cry has been ported to the Xbox; rather the Far Cry experience has been ported to the Xbox. Instincts is a fantastic game in its own right and should be at the top of every Xbox owner's Xmas list. And for the PC diehards, this could be the game to persuade a bit of console lovin' into your life.



Developer **Ubisoft**
Publisher **Ubisoft**
Website **www.farcrygame.com**
Rating **16**
Other platforms **No**

VERDICT

Everything that made Far Cry great on the PC has been extracted and reworked into a completely new game. Brilliant.

Um...



score

9.5
OUT OF 10

500 FREE MINUTES INTER-CAPITAL CITY PHONE CALLS EVERY MONTH* with 512k Broadband NO EXCESS DOWNLOAD CHARGES

512/128k ADSL, Unlimited Downloads (throttled to 64k after 20GB), 500 minutes free phone calls per month*, Cost: \$49.99# per month
LOW INTERNATIONAL RATES UK 1¢/min | USA 1.99¢/min | NZ 5.2¢/min | Hong Kong 2.77¢/min | China 3.46¢/min | Italy 4.19¢/min plus many more...

This plan is available nationwide, excl. TAS. *500 minutes free calls per month apply for calls to: Sydney, Melbourne, Brisbane, Adelaide, Canberra and Perth, excl. mobile calls. Free calls are calculated with a minimum call time of 10 minutes and thereafter in 1 minute increments. TPG will debit customer's credit card \$20 for prepaid call credit to cover calls outside the free calls, e.g. international and mobile calls. Total minimum cost over 6 months is \$578.89 (includes setup cost of \$129, 4 Port Voice Router cost of \$129.95 and \$20 non-refundable pre paid call credit). #Monthly payment by Credit Card only. Full terms & conditions apply. See www.tpg.com.au/voip/ for details. TPG Internet Pty Ltd ABN 15 068 383 737

TRG
INTERNET
1300 360 855
WWW.TPG.COM.AU



This is how we eat your brains, hurrah, hurrah. This is how we eat your brains, hurrah! Hurrah!

Stubbs the Zombie: Rebel without a Pulse

Logan Booker has a need, a need for brains.

By this time next year we'll be knee-deep in a hoard of bad-arse zombie games, each one just as hungry for your attention as the next. Dead Rising; City of the Dead; RE 5; Possession – just to name a few. Most if not all these games put you in the role of the survivor, searching desperately for another round for your shotgun and a dark nook the AI can't navigate into.

Stubbs the Zombie: Rebel without a Pulse turns the survivor concept on its head and has you playing the role of an undead guy bent on genocide. It's a refreshing change.

Stubbs has arguably the best music ever, bettering even GTA: San Andreas. The opening menu is graced by the Raveonettes' version of *My Boyfriend's Back*, followed closely by a remake of the 1950s Chordette's classic *Lollipop*. With a soundtrack hand-picked to give the game a disturbed retro feel,

you'll have no trouble immersing yourself in the bizarre world to come.

Based on an updated Halo engine, Stubbs looks as pretty if not more so than the sci-fi FPS did on the Xbox.

There's a constant grainy full-screen shader to give the game an old film look, and Stubbs never-healing wounds are disgustingly shiny.

The city the game is set in,

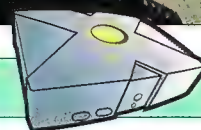
a retro-futuristic metropolis called Punchbowl, would have benefited from a bigger population, but that probably would have been pushing the spec a little.

As you may have guessed from the screenshots, it's damn gory. From the moment you clamber from the ground, interrupting a romantic moment between a high school jock and his sweetheart, to the outright destruction you'll inevitably bring down on an unprepared police station, the blood, guts and brain matter never let up. In the tradition of all fine zombie movies, your victims return as undead killers. It doesn't take long to amass a mismatched coterie of decomposing groupies, ready to spread your condition and act as a moving inhuman bullet shield.

Combat is mainly melee, with wailing fists and gnashing teeth. Your ranged abilities include bowling your head (which explodes), throwing your guts (which also explode) and farting to stun enemies (which is a kind of explosion). All of these are powered by your brain-eating. Your final attack is your hand, which can be remotely controlled to possess a living opponent.

Stubbs is only let down by the story progression. It's understandable that the game may go plotless for the first 30 minutes, but it's disappointing to still have no clue as to why things are three or four hours later. A lack of a zoom function also makes ranged combat harder than it should be.

If you can put aside these failings, then Stubbs is definitely a title to try, especially if you love retro music and zombies flicks.



Wide Load Games
Aspyr Media
www.wideload.com

1-2

PC/Mac

VERDICT

Great soundtrack; gory zombie gameplay; original and fresh; retro feel.

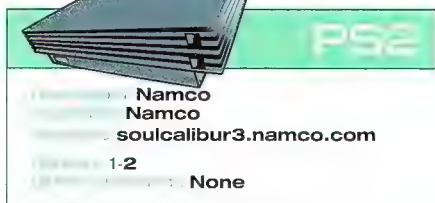
No zoom; slow early game.



score

9.0
OUT OF 10





VERDICT



RPG styled character creation process; Innovative game modes.



Dialogue and story loses a lot in translation; Lacks Tekken's refinement and presentation.

score

8.0
OUT OF 10

Soul Calibur 3

Ron Osborn tells himself a big sword isn't compensation for anything.



Soul Calibur 3 stays true to the single round, KO or ring-out formula that has been used since the series' origins and aptly adds three new characters to the roster: Zasalamel, a steroid pumped grim reaper look-alike with a hulking scythe that can deliver copious amounts of hurt from great distances; Tira, a nimble, scantily clad wood-nymph-like character who fends off enemies with a serrated hula-hoop and a mouthful of gibberish; and finally Setsuka, a busty geisha wannabe whose umbrella inflicts a lot more pain than it would first appear.

If you don't care for any of these, you can always create your own sword swinging, scantily clad, overly endowed avatar. The process borrows heavily from the RPG genre where you choose a profession to determine the weapon and fighting style of your character. Almost every aspect can be tweaked and changed to your liking and of course more 'parts' can be unlocked as you play through the game.

The ability to create a character really comes into its own in Chronicles of the Sword mode. This diversion to the main game is part strategy, part RPG and of course, part beat-em-up. It smacks the crap out of the rather dull Devil Within mode from Tekken 5. Like an RTS your objective is to move your units around a map and take over enemy positions. Enemy encounters however, take place in the familiar one-on-one arenas where you also fight for experience points to strengthen your characters.

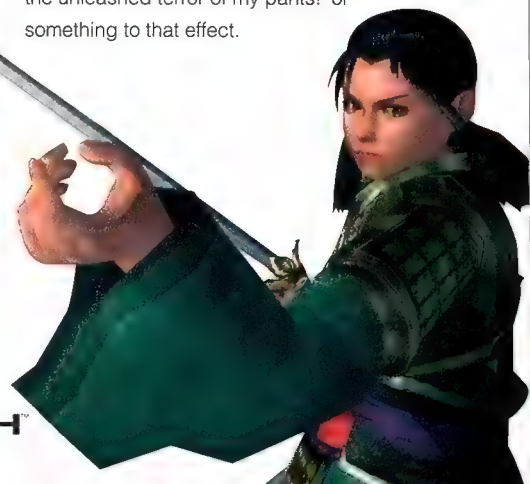
The often short lived bouts of SC3 place a strong emphasis on offense and a combination of perseverance and button mashing can see

you through to the end of the game's story mode in a relatively short period of time – even the final boss is susceptible to a fluky 'ring-out' win. This style of gameplay makes SC 3 more accessible than a title like Tekken but it does have its drawbacks.

The stages for instance have not evolved much since the days of Soul Blade on the Playstation 1. Despite being set against quite extravagant backdrops, they are limited to being circular or square 'rings' with no real unique characteristics, making your choice of stage inconsequential.

It's a shame Namco couldn't package the latest Soul Calibur title with the same refinement and presentation values we saw in Tekken 5. There's a lot of text to read between battles and given that the choices you make have very little bearing on the outcome of the game, you'll find yourself skipping over most of it.

Still, Soul Calibur 3 is filled with big swords, busty babes and more obscene sounding Japanese battle cries than you could squeeze into a sumo wrestler's jock strap. Just make sure you change the speech setting from the default English or you too will soon be shouting 'Fear the unleashed terror of my pants!' or something to that effect.



QUALITY ACCESSORIES FOR QUALITY ENTERTAINMENT



MEDIA AMP

- Micro Stereo Speakers with SRS® 3D Stereo Audio
- Charge and Display your PSP™
- Powered by PSP™ AC Adapter or four "AAA" batteries
- Twin Stereo Earphone Outputs
- Stereo RCA Outputs for Hi-Fi connection



* Console not included.



* Console not included.

TECH PACK XL

- Movie Charge Stand™: Illuminated PSP™ stand with 20-degree viewing angle
- Soft Carry Case: Transport, protect and store your PSP™ and UMD™ discs
- Datacharge™ USB Cable: Recharge your PSP™ and transfer data to and from PCs
- In-Car Power Adapter: Power and recharge your PSP™ from any 12Volt car lighter
- Speaker and Earphone splitter: Share your PSP™ audio
- Removable Screen Protector: Protect your PSP™ screen from scratches
- 2 UMD™ Cases: Protect your games and movies

OTHER PRODUCTS AVAILABLE IN THE JOYTECH PSP™ RANGE

- ArmorLite Case
- Datacharge™ Cable and In-Car Adapter
- Movie Charge Stand™
- Power Dock and Screen Shield
- Travel Case
- Visor Extreme



BATTERY PACK

- Rechargeable Ni-Cd Battery Pack with Cable Manager
- Double the playing time of your PSP™ system in just one charge
- Recharges using PSP™ AC Adapter




www.joytech.net



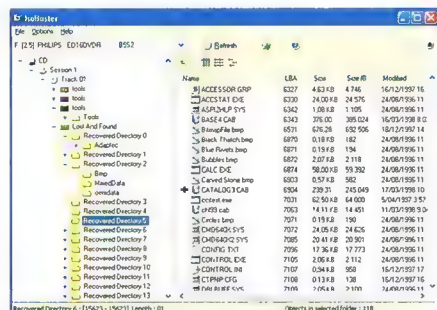
Insufficient redundancy cycles

Every so often a CD I have will fail (usually a backup CD) and the error message I get is a 'Cyclic Redundancy Check'. Most of the data on the CD can be read, however some cannot. I'd like to know exactly what a Cyclic Redundancy Error is. Some sort of failure within the CD? Is there any way to fix the problem and recover the data?

Tom


 Cyclic Redundancy Check, or CRC (tinyurl.com/CLL9N), is a very simple error-detecting system. It's computationally cheap and it doesn't need much space for the 'hash' it produces from the input data, so you'll find CRC error detection all over the computing world. On CD-ROMs, the CRC data is in one of the 'subcode' channels (tinyurl.com/DHR5O) evenly distributed through the disc along with the data you can actually access.

When you get a CRC error, it means the data on the disc is corrupted for some reason (or, less probably, that the data's fine but the CRC's corrupt). Almost always, this is because of disc damage. There's nothing you can do about it besides checking the disc for muck or scratches you can possibly repair. It tells you when something's wrong, but can't fix it.



IsoBuster is one of those programs that people hardly ever use when they're in a good mood.


Say it ain't so

 LCDs don't get screen burn? Yes they do. But how? My brother bought a very expensive flat panel LCD monitor, a nice 19in that rotates on its stand for portrait and landscape view.

The other day I plugged it into my laptop, and at the bottom of the screen, while the light blue Windows booting screen was on, the Windows XP Taskbar was clearly visible. With my brother's system tray icons and everything. I was booting Win2K, so I know it wasn't mine!

The screen's less than a year or so old, and I've never seen this on any LCD before, and indeed thought it was impossible. I just wondered if you had ever heard of this before?

Jason Wright

 Yes, LCD screens can suffer from 'image persistence', but it's not burn-in in the CRT or plasma sense. The subpixels aren't actually getting any dimmer anywhere on the screen, and the 'burn-in' shouldn't be visible when the monitor displays a white screen. But some sort of capacitive build-up does happen, giving the subpixels a bias depending on what they've been displaying for a long time.

The cure is supposed to be just turning the monitor off for a while, but it might be an unfeasibly long while. Some people report the image persistence just doesn't go away, and so might as well be CRT-style burn-in.

And, heck, maybe sometimes it is. It's not ridiculous to suppose that the characteristics of the thin film transistors in the LCD panel sandwich might change depending on how long and how often they're turned on. If this is the case, though, I don't know which kinds of panel are particularly susceptible.


More information can be found at: tinyurl.com/3l9up, tinyurl.com/e447p
Neat-o picture: tinyurl.com/9n7rk

IOOTM wins a Logitech G5!

Faster than a running rodent and far less furry. Nothing comes close to Logitech's latest opus.




Buzzkill

 My PSU had been vibrating a lot lately so I decided to take it apart and oil the fan. One thing I forgot was the orientation of the fan, but I figured it would be better if the fan sucked cool air from the outside and blew it over the heat sink.

My question, though, is: Was there any real danger in taking apart the PSU, or am I obscenely lucky to be able to type up this email? I didn't take any real precautions; just unplugged the computer and pressed its power button before opening it up.

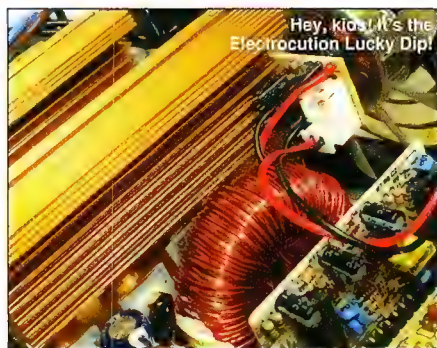
Davo

 Your guess about the fan direction is logical, and perfectly matches the way PSU fans were meant to work in the original ATX spec. And it's wrong.

The standard airflow direction for PSU fans, enshrined in the revised spec that codified what everyone was doing anyway, is from the inside of the computer case to the outside. Yes, that means the PSU is breathing air that's been warmed by the computer, but it also means it's contributing to throughflow ventilation of the case. Front fans are, by convention, intake fans.

If you want to set your case up so the air flows back-to-front, that's fine, but if you have a PSU fan and a front fan that are both trying to suck air into the case, they'll be fighting each other.

The big electrolytic capacitors in PSUs can hold a charge after the PSU is turned off, but probably won't. Well-designed PSUs put bleeder resistors across their caps when they're turned off, draining



them long before you could unscrew the casing.

There's always the possibility that you have a badly designed or faulty PSU, though. In that case, caps can hold a charge for ages. For that reason, treat all caps as if they have barbed rusty spikes sticking out of their terminals, until you've put a meter across them or just discharged them yourself. If a cap is charged to some risky voltage, touching its contacts will only give you a brief scary jolt at worst, unless you manage to touch one contact with one hand and the other contact with the other, in which case the jolt will be across your chest, which can be bad. Shocks from hand to foot can be lethal too (hand charged, foot earthed), but people injured by electricity are usually injured because muscle spasms make them fall down and hit their head, jump off their ladder, stab themselves with their screwdriver, or whatever. If you're sitting at the kitchen table fiddling with an unplugged PSU, there probably aren't many such hazards.

All usual disclaimers apply, of course. If anyone out there lights themselves up as a result of following my advice, then I never said a thing.

Roughing it

I'm heading out on a road trip and as such my only source of power will be a 650W generator. I was wondering whether or not it was a good idea to charge my TPG widescreen laptop off the generator, or whether the irregular spikes would be too much for the power supply to handle?

Mike

It ought to be OK. Switchmode power supplies of all kinds, including PC and laptop PSUs, are completely insensitive to power waveform, so they'll run fine from the output of any inverter or generator, even if it's an ancient squarewave unit that'll set a power drill on fire.

There's always the possibility of disaster, and management assumes no responsibility. If the generator's old and crusty (or just cheap and nasty) then it might be outputting too high a voltage, or have really spiky output that might cause problems. But, realistically, you're probably going to be fine.

I/O OF THE MONTH

They're holding out on us

I've been an avid benchmarker of my PCs for a very long time now. As soon as I get a new PC, I load Windows, the relevant Service Packs and the latest drivers for all of the hardware. Then I sit down to a warm night of benching.

One day, after running through 3DMark05 (and watching my new PC crawl through the tests), a question started to bug me: If I buy the latest and greatest hardware, and it still performs like crap in these benchmarks, then what sort of 'off-world' hardware are these Futuremark guys using when they want to test their new benchmarks? If the new benchmark is designed to test the next generation of PC hardware, where are they getting their 'next generation' hardware from? How do they know if their benchmark is going to turn out right?

I'll be able to sleep a few hours more each night if you know the answer to this. Thanks.

Brett Armstrong

Hardware companies may give pre-release gear to some software makers – mainly game companies, but benchmarking outfits as well – but lead times are pretty short in PC hardware. No game coders are signing NDAs and collecting their GeForce 15000s yet.

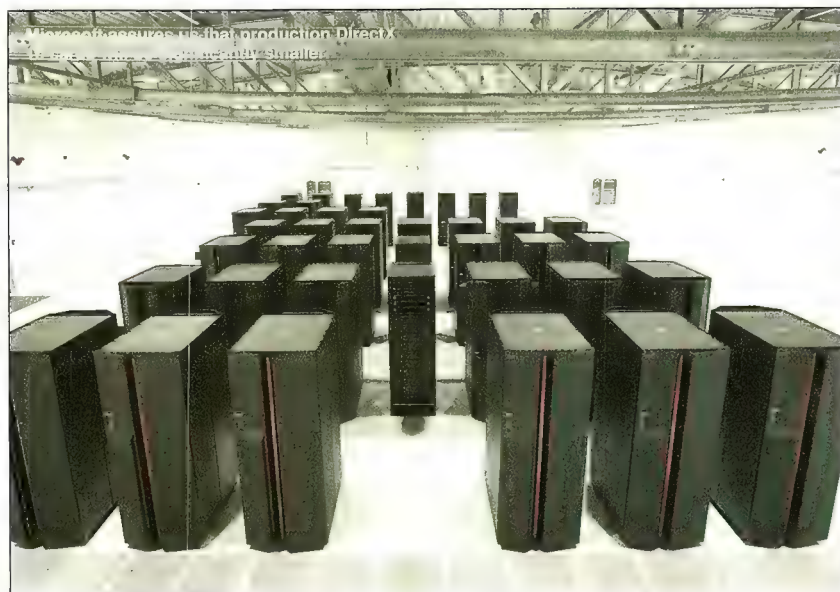
Instead, people writing code for hardware that doesn't exist yet use emulation. Sometimes that emulation is running on

a more powerful (or at least much more expensive) system, like a workstation or the custom development boxes that console coders use, but it doesn't have to be. You can emulate any level of 3D acceleration on pretty much any other hardware. If necessary, you can do the whole darn thing in software, through any video adaptor at all.

That's achingly slow, of course, but it's not necessarily a big deal for most game development. There's a lot to a game besides graphics; most development can be done with low-polygon basic-shader placeholders, and indeed may have to be, as modern game art takes a very long time to make.

Futuremark are an extreme case, because 3DMark can be thought of as a severely unfinished game. If you're writing a real game, you have to be careful not to add features that you're later going to have to take out to get the thing to run tolerably on normal computers. Futuremark don't have to worry about that – the whole idea of each new 3DMark is that it should bring current hardware to its knees.

Emulating future hardware doesn't work perfectly, because the specifications the emulator is written to match don't necessarily match what the graphics chip companies end up implementing, and emulators aren't necessarily bugless either. But it beats building a time machine.



hotbox

The best reader-submitted custom made boxes every month!

Welcome to Hotbox! Each month you'll find the winning Hotbox of the month and runners up as voted for online at www.atomicpc.com.au. Want to win? Submit your box now!

Haso's Ammo Box

This is my latest hotbox. I started with a plain GTR case about 8 months ago and had in mind an idea for a military-type ammo box. Trawling through PC Case Gear I came upon the camo wrap and the wallet got lighter and lighter from there. All the mods are pretty straight forward: Window, fans, LEDs, etc but it taught me a few new skills. I've decided to sell her and have a 64-bit SLI system in my sights for the next beast – although I've just got hold of a K6-2+ 450 and KTX430.

Haso



technical details

- Intel Pentium 4 2.8 @ 3.06GHz
- Gigabyte GA-8PE1000Pro2
- 512MB OCZ 3200 RAM
- Gigabyte 3D Cooler Ultra Pro
- Powercolor 9600XT Bravo (2.5ns) @ 412MHz
- Seagate 120GB SATA; 80GB PATA



irvo44's SunonBoy

About a year ago I saw the Super Lanboy and thought it was a damn nice case. As I'm not very good with power tools (short fingers) I thought it would be easier to go pre-modded. After about a month of looking at high case temps and realising the Antec 120mms were just useless, I got 3 x 120mm Sunons and the Gigabyte Cooler Ultra 2004 GT. I drilled fan screw holes in the HDD frame to mount the third Sunon. Seeing as I spent everything on my comp I had to build a fan controller with \$10 of parts from Dick Smith. It comprised of 2 x 3-position switches; 3 x 40ohm heat proven resistors and a lot of wiring. Now I can turn them on full speed, half speed and off. The window looked a little boring so I got a PC Case Gear appliqué and slapped it on.

irvo44



technical details

- AMD Athlon 64 3400+
- DFI LanParty UT mf3 250GB
- GeForce 6800GT
- 1GB Geil DDR400
- Western Digital 200GB SATA
- Custom fan controller



hotbox OF THE MONTH

hotbox

Attila's Dual-Desk PCs

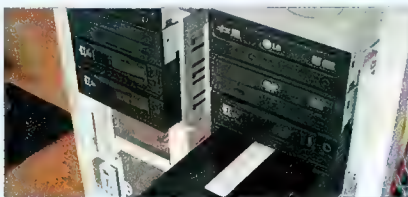
The idea for this case mod was to get two PCs, UPS, KVM switch, cables etc inside one case so as to keep things neat and tidy, making sure performance and cooling were affected as little as possible. The case was built around the guts of two CoolerMaster Praetorian PC cases with one mobo tray inverted so as to have the motherboards back-to-back. An alloy frame was constructed using an off-the-shelf cubelock and some angle. The front was made with a couple of bits of meranti to match the desk I made a few months ago. Because I run several operating systems I installed a pair of mobile racks into each PC so I can swap hard drives in and out at will. One PC is purely a media centre for watching TV and DVDs and listening to music from the large library I have stored, the other is for work, playing and surfing the Web.

Attila



technical details

- AMD Athlon XP 3400+/AMD Athlon XP 3500+
- Gigabyte K8NS PRO/Gigabyte K8NF 9
- 512MB RAM/1GB RAM
- ATI RADEON 9600/GeForce 6600GT
- Compro dual TV tuner card
- Numerous SATA drives



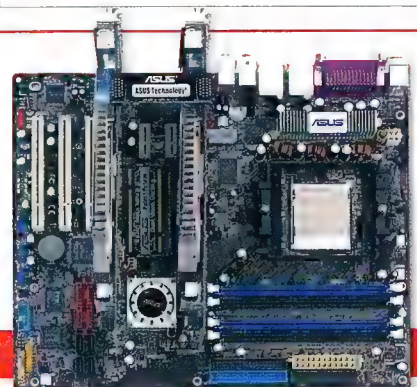
Fame, fortune, and free stuff can be yours!
Send your Hotbox to
hotbox@atomicmpc.com.au
and include the following:

- 3-4 high resolution, well lit, pictures.
- A 250 word description of how you made it, the obstacles you overcame, the tools you used, and your inspiration.
- A detailed list of the machine's specs.

Hotbox of the month wins an **ASUS A8N-SLI Deluxe!**

- Socket 939 AMD Athlon 64/FX/X2
- Dual RAID & dual Gigabit LAN
- NVIDIA nForce4 SLI chipset
- 8-channel audio
- SATA 3GB/s
- Dual-core Athlon

VOTE ONLINE NOW! www.atomicmpc.com.au/hotbox.asp



teamatomic

Who are these crazy people and the PCs they like to use?



Ash

I spread the word of Atomic wherever I go. I proposed to my fiancée at Machu Picchu in Peru, 7700 feet up, while wearing my Atomic t-shirt. The shirt *made* it. My other desire is my PC. Dual-core overclocked sex. I habitually kernel compile in Gentoo, overclock and optimise, but rarely mod these days. My first mod was to spray my 486 case black – back when all you could buy was beige. In its time my PC has seen Tseng, 3dfx, Orchid, Aureal, Gravis and other forgotten giants come and go, but we're still together. And I love this team!

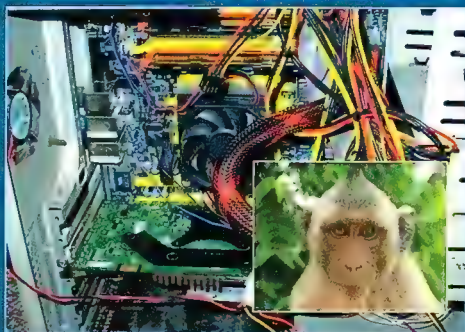


Ash's 2nd love

- Athlon64 4400+ X2 @ 2.6GHz
- Thermalright XP90C + Thermaltake SilentCat 90mm
- 2 x 1GB OCZ PC4000 Platinum

- ASUS A8N-SLI Premium
- 2 x Albatron 7800GTX in SLI
- 2 x WD 74G Raptors in RAID 0
- 1 x Barracuda 7200.8 400G
- Creative X-Fi Fatal1ty FPS

- Viewsonic VX924 19"
- Sony PS2 black keyboard
- Logitech MX510 mouse
- Antec P180 case
- Seasonic S12 500W PSU



Logan

Lets talk about my beautiful system, let down by what can only be described as an itty-bitty hard drive. Seriously, I'm deleting stuff almost every day just to make space for my pomography. I managed to squeeze an extra 400MHz out of my Winchester-cored Athlon 64 – anything higher and SuperPi refuses to run. For some reason I have yet to benchmark with 3DMark05, but I did run Doom 3 at 1024 x 768 high with 4x AA before writing this and scored 88.9fps. My box is super in all the ways that matter. And yes, Bond looks *just* like me.

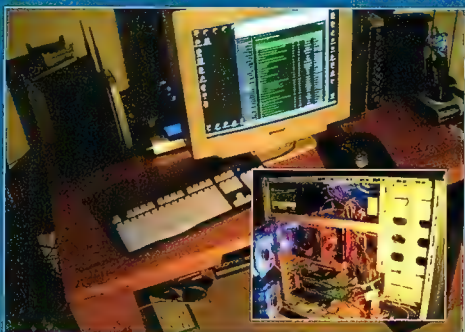


Loges' awesome machine

- Athlon 64 3000+ 1.8GHz @ 2.25GHz
- 2 x 1GB G.Skill PC4000 3-4-4-8 @ 245MHz

- Stock AMD heatsink + fan
- DFI LAN Party nF4 SLI-DR
- 60GB Seagate SATA 7200rpm HDD
- Creative Audigy 2 ZS Platinum Pro
- MSI 7800 GTX @ 470GHz/1.2GHz

- LG 17" Flatron 775FT
- Microsoft Laser Mouse 6000
- Antec TruePower 480W PSU
- Generic aluminium case
- Method to madness cable wiring



Ben

I have simple needs. My games must run at 1600 x 1200 @ 80fps or higher. My music must sound exquisite. I update my kit pretty frequently, and have recently built an all-new system, but have used the Sony PS500 for almost 10 years, despite its age it still puts out the best image quality I've seen on any monitor. Yes, my desk is always tidy. Really! I started on an Amiga 500 and my first PC was a 386DX/25, to which I added the separate maths co-processor because Falcon 3.0 supported it. I love you all.



The Ben box

- Athlon 64 3800 @ 2.64GHz
- Thermalright XP90C + Thermaltake SilentCat 90mm
- 2 x 1GB Corsair TwinX PC4000

- Abit AN8-SLI
- 2 x Leadtek 7800GTX in SLI
- 2 x 200GB WD Caviars in RAID 0
- Creative X-Fi Elite Pro
- Sony PS500 21" monitor

- Flexiglow xRaider glowy keyboard
- Logitech MX518 mouse
- Audio through NAD 312 amp, Krix Equinox spkrs, Sennheiser HD595
- Quantum 1337 bling case



Bennett

Hi, my name is Bennett Ring and I'm a gameaholic. My addiction began at the age of 6, when my cheapskate parents bought me a 2nd-hand Commodore 64 that would overhear. From there I graduated to a 286 where I discovered the joys of the original MS Flight Sim. After selling out for a few years to the temptation of consoles, I was reintroduced to the joys of the PC when a pal showed me Quake. Life sucked until Atomic found me, picked me up, and foolishly gave me a job. Finally I could talk openly about my perverse hardware fetish.



Bennett's gaming rig

- Athlon 64 3800+ @ 2.4GHz
- 2 x 1GB Generic DDR400
- MSI 7800GTX overclocked
- 2 x WD740 Raptor HDs in RAID 0

- Creative X-Fi XtremeMusic
- Antec P180 case
- Hercules XPS510 5.1 speakers with Creative Surround Sound stand
- Enermax 500W PSU

- Sony G520 21" CRT monitor
- Logitech Freedom wireless joystick (for BF2)
- Thrustmaster TopGun Afterburner 2 HOTAS (for IL2, LOMAC)



Bill

I have a confession. This little 'Shuttle' is the first PC I have ever bought! Being a designer and all, Apple has been my religion for years. But since joining Atomic, I bit the bullet and entered the dark side of the force. I have to admit, the Shuttle has a bit of a grunt for such a small case. That's what my mum said too. Since my conversion (or my designer friends say... betrayal), I have been impressed with the my little PC. Goes nice with my bottle collection. One thing I have to say, Macs still rock! [Ash – don't worry, we're working on him]



Bill's SLAB

- Shuttle SN25P case
- AMD 3200+ @ 2.2GHz
- 2 x 1GB of Gell PC3200
- 300GB Barracuda 7200.8

- Viewsonic VX924 19" LCD
- Logitech MX518 mouse
- Logitech LX4000 wireless keyboard
- External Seagate 400GB Hard Drive
- External Lacie 200GB Hard Drive

- Sennheiser HD600 headphones
- iPod Shuffle 1GB
- iPod original 10GB
- Shrine to Steve Jobs
- Strategically placed glass of wine

matchbox

**Competitive
performance PCs
Atomic style**

We're Atomic. You're Atomic. We know how to build powerful machines.

And so do you. So welcome to an all new section, dedicated to the glorious pursuit of performance computing. Overclocking, watercooling, tweaks and mods - whatever it takes to build the biggest, baddest, fastest mofo machine on the planet.

We've specced and built a beast machine, but can you beat it? Is your PC faster? Prove it!

Each month we'll feature a competitor to our machine. Both will be run through a grueling

set of benchmarks covering all manner of performance. If your box can beat ours then fame, glory, and adoring adulation of the opposite sex await. Oh, and super-spunkworthy bag of prizes of *your* choosing from a fine selection. Here's how it works.

You can see our Beast Box below. We'll call it *Version 1.0*. You've got some of the specs, so you have an idea of what you need to beat it. Use all your resources: hardware and overclocking, cooling and modding, drivers and registry tweaks. Whatever it takes to build

the fastest box in Oz.

Submit it and we'll bench it in the Atomic Labs in benchmarking marathon to the death. The machine with the highest score, wins. It's that simple.

The configuration of the Atomic box will stay the same until it is beaten. So if one contender doesn't beat it, it's onto the next! Then, like with Hotbox, we'll gather together all the winners at the end of the year for a final battle of who can build the beefiest box, and win a grand supreme prize. So are you hardcore enough?

matchbox

ATOMIC'S BEAST BOX 1.0

Motherboard
ASUS A8N32-SLI Deluxe

CPU
AMD Athlon64 FX57

Memory
2GB OCZ PC4000 EB Platinum

Graphics
2 x Leadtek 7800GTX TDH Extreme in SLI

Storage
2 x WD 10k Raptor 74GB in RAID 0

Cooling
Thermalright XP120 + 120x25mm fan

Power
CoolerMaster 550W PSU

The rest of the stats like timings and clocks... we can't give too much away!

Build a box to beat it, or submit your ready-made machine, and enter matchbox.

HOW TO ENTER

Submit your box details to
matxhbox@atomic.com.au.

Send pictures, your name and address, and a contact phone number.

Get to it and lets see if you've got what it takes to take down our beast!



Born free

To enter, go to www.atomicmpc.com.au/competitions. You can only enter once per competition or you'll be disqualified. You must provide a postal address and phone number for prize delivery when you enter (not a PO Box).



Win a GeIL One DDR 2 x 512MB kit valued at \$499!

It doesn't get any easier than this: GeIL Memory knows Atomicans are a talented bunch, and they want YOU to design a graphic for use in their next ad campaign – the winning graphic will even be published in *Atomic* with credit to the winning designer! There are three runner-up prize packs of 2 x 512MB GeIL High Performance Dual Channel Kits up for grabs valued at \$199 as well, so get designing! To enter simply produce a piece of artwork that represents high speed or strength (possibly from gaming) by using GeIL Memory.

Send a preview of your entry to support@amitech.com.au as files no larger than 1.5MB. Include your full contact details. Finalists will be contacted by phone for final images.

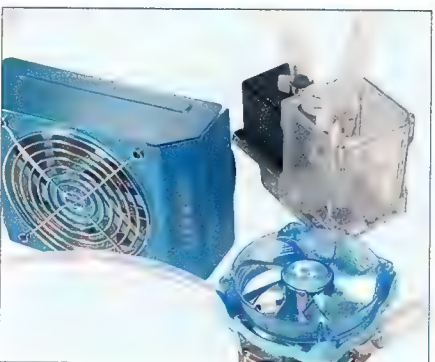
Terms and Conditions: The competition will be run over two issues. Closing date is 7/12/2005. Each entrant surrenders their right to the final artwork upon submission with the art being used by AMI Technologies (Aust) Pty Ltd at their discretion. No currently copyrighted images may be used as the basis for the art. The competition promoter is AMI Technologies (Aust) Pty Ltd. Judges decision is final and prizes may not be exchanged for cash or any other product.



5 x The War of the Worlds on DVD from Paramount

This gritty, shocking and realistic docudrama by Steven Spielberg is essential viewing by all concerned citizens. It covers the dramatic recent events when an alien taskforce was sent from Mars to save attractive young girl-next-door Katie Holmes from the evil clutches of scientology. Spielberg effectively portrays the Alien's battle with the Scientologists and their tyrannical leader 'Tom Cruise'. Such is the determination of the noble and valiant aliens that cities are leveled and millions of lives lost in the great confrontation, but such devastation is shown to be necessary in order to save Katie.

Q Which legendary film director narrated War of the Worlds in 1938 and created mass hysteria?



2 x Gigabyte Watercooling Kit

One day, a long long time ago, a young scientist on a hot day sought refuge from the scorching midday sun. He tried standing in front of a desk fan, while holding a huge sheet of pure copper in order to increase his personal surface area. Unsatisfied with the results, the scientist though "bugger this, I'm going for a surf". Mere moments after plunging into the refreshing waves at Bondi his eureka moment exploded upon him. "Water cools better than air!" He exclaimed to the puzzled surfers nearby. Aeons later, Gigabyte applied this miracle to CPU cooling in a way since proven to be superior to its competitors.

Q Why does ice float?

To enter visit www.atomicmpc.com.au/competitions. The closing date for entries is 7 December 2005. Winners will be announced in *Atomic 61*.

Terms and Conditions of Entry. 1. The promoter is Haymarket Media of 52 Victoria Street, McMahon's Point, NSW 2060. Promotion period is from 9.00am on 09.11.05 until 12.00pm on 07.12.05. 2. Entry is open to residents of Australia and New Zealand. Management and employees of Haymarket Media and their immediate families, and any advertising, marketing or promotional firms associated with this promotion are not eligible to enter. 3. Enter by posting or emailing forms to Haymarket Media. 4. The draw will be held at the offices of Haymarket Media at 5.00pm on 07.12.05. Winners will be notified by mail and published in *Atomic 60*. The prizes are not transferable or exchangeable. 6. The judges' decision is final and no correspondence will be entered into. 7. The promoter reserves the right to publish the winner's name and suburb for promotional purposes. 8. All entries will become the property of Haymarket Media.

atomic
...your favourite sci-fi tv show?

editorial editorial@atomicmpc.com.au
editor ashton mills babylon 5
deputy editor logan booker deep space nine
senior sub editor melanie farr lost in space
online producer ben mansill space 1999
editorial director debra taylor blakes 7

design design@atomicmpc.com.au
art director bill chan dr who
product photography jason busch

contributors

bennett ring, tim dean, daniel
rutter, craig simms, nathan davis,
ron osborne, nick ross, ron
prouse, kate inabnet, leigh dyer,
steven macerak jnr, virtuoso.

production

production coordinator
alison maybury
printed by pmp print

distributed by

network distribution company
(02) 9282 8777
gordon & gotch new zealand
(09) 625 3005

advertising + marketing

t+61 2 8399 3611 f+61 2 8399 3622
group key accounts darren mcnelly
dmcnelly@atomicmpc.com.au
sponsorship manager cathy snell
csnell@atomicmpc.com.au
circulation marketing manager
emma mcrobert
marketing & promotions neil parkin

haymarket media

t+61 2 8399 3611 f+61 2 8399 3622
52 victoria street,
mcmahons point,
nsw 2060 australia
managing director jeremy vaughan
director karl penn
associate publisher jon westnedge

Atomic: Maximum Power Computing is published monthly by Haymarket Media. Company registered in Australia (ABN 81 083 063 914). This publication may not be reproduced or transmitted in any form in whole or in part without the written permission of the publisher.

Liability: While every care has been taken in the preparation of this magazine, the publisher cannot be held responsible for the accuracy of the information herein, or any consequence arising from it. Please note that all review judgements have been made in the context of equipment available to *Atomic* at time of review.

Editorial and product submission: *Atomic* welcomes all information on new and upgraded products and services for possible editorial coverage. However, we respectfully point out that the magazine is not obliged to either review or return unsolicited products. The Editor welcomes ideas for articles, preferably sent in outline form, with details of the author's background and a few samples of previously published work. We cannot accept responsibility for unsolicited copy and stress that it may take some time for a reply relating to these submissions to be sent out. *Atomic:* All submissions must be the original work of the person submitting, and submitted works become the property of Haymarket Media.

haymarket



April 2003 -
March 2004:
29.98

websight

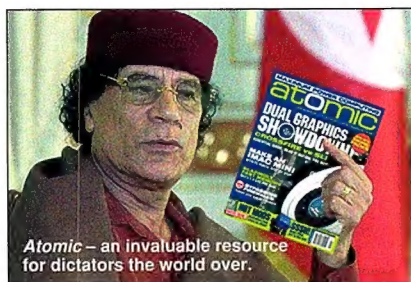
A hands-on look into the awesome Atomic community.

PROGRAMMING DEVELOPMENT	The complete Atomic DVD writer comparison 1.1	140	6284	vidoes	7/10/05 1:41:10 PM	by Strapone 8364
GRAPHICS DESIGN	atomic	400		ari0	14/10/05 1:57:02 PM	by NeOn 87
PC GAMING	[BUMPED] [BUMPED] Computer Tech Tips..... (1 2 3 ... 21)	6	81	vk2amv	14/10/05 1:07:25 PM	by m0064
CONSOLE GAMING			70			

If a picture paints a thousand words, then Atomicans have written the equivalent of *War and Peace* in the past few weeks.

It started, as most epics do, with a simple challenge: 'the Atomic Extreme Magazine Reading Challenge'. Morgoth foolishly invited his fellow Atomicans to post a photo of themselves reading *Atomic* 'in the most weird way possible'.

Now, asking Atomicans to do something weird is like asking DNA molecules to divide. It's hardcoded in their very nature. It's *what they do*. And when you generously offer prizes – as Tom and MattNelson did – then you can bet your 46th chromosome that Atomicans are going to get into it with gusto.



Of course, most entrants immediately opted for the nude and lewd.

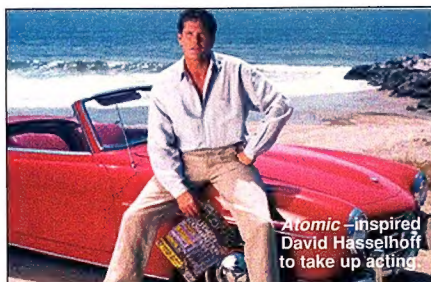
Tom came out of the closet, lingering longingly in lingerie, only to have his panties packed back into the pantry by Wallacey junior. Voightkamp, Cisco and Fatal Error similarly took their minds to the gutter – in fact, *below* the gutter – with an eerie series in the stormwater drains deep below Melbourne. Kommando took his best shot at

the rifle range. But in the end, Miss Peach's, err, *pria-pic* in the local, err, *toy shop*, err, *beat out* the, err, *stiff competition* from Paka's, to win first prize. Check out the assorted (or should that be, 'a-sordid'?) entries at: www.atomicmpc.com.au/forums.asp?s=1&c=1&t=70228. Best be sure your mum's not looking over your shoulder.

While some Atomicans were doing horny photos, Orcone was doing a Donald Horne by documenting *Atomic*'s history, with a little embellishment (or should that be, *embullshitment*?) by Photoshop.

It started with the early issues, which gave much-needed succour to the diggers in the Dardenelles... then led to the 60s-era issues which provided a welcome diversion for Neil Armstrong in the dunny of his lunar lander, which led to an enduring source of wisdom and inspiration for leaders of disparate religions. Then, a non-steroidal performance-enhancing ephedrine for the world's elite athletes and finally, faithfully, this fine magazine's proud place in the history of the planet Earth was dutifully detailed.

But sadly, every historical account is subject to challenge by the envious, the cynical and



the just plain picky. And so it was that Robbie the Seal sought to sour *Atomic*'s parade with a dark counter-history chronicling the magazine's less savoury moments.

How *Atomic* fuelled Der Fuhrer's fury, leading to one more Reich than was strictly necessary, the glowing green fingerprints all over Mao Zedong's Little Red Book, the pitch-doctoring scam which cost the Australian cricket team The Ashes, allegations of *Atomic*'s collusion with mysterious alien abductors and more...

Too many skeletons, too few closets!

Yet, all the transgressions reported by Robbie the Seal paled to insignificance when Orcone himself revealed the singlemost shameful epithet in *Atomic*'s history... and yes, it's all about the Hoff.

Should the current generation of Atomicans be proud or penitent about their magazine's chequered past? Make up your own mind at www.atomicmpc.com.au/forums.asp?s=1&c=1&t=69701.

When you're done, come make modern history with your fellow Atomicans in the Atomic Forums. (Or should that be, 'make up history'?)

Virt

post of the month

www.atomicmpc.com.au

Sometimes, there can't only be one. There were many potential POTMs this month, way more than average and we think that's just super. We boiled away the fat and were left with two golden posts, inseparably great.

Each brought out the very best the *Atomic* community has to offer. Each was a doorway to the true lives of Atomicans. Both were really really wonderful.

Both have already earned a place in Atomic History.

Logitech agree, and have cheerfully provided two new G5 meecii to make the double award possible, bless em. We couldn't do it without you.

So with thanks and congrats, our Legends of the Month, being two of our favourite Atomicans and class acts all the time anyway, are:

Hulkster

Who are you really?
www.atomicmpc.com.au/forums.asp?s=1&c=1&t=71825

Mac Dude

A day in the life of an Atomican (pictorial)
www.atomicmpc.com.au/forums.asp?s=1&c=1&t=70909



fallout

Funnies and
humour from the
fallout zone

Clock for a clock

Logan Booker wants to squeeze a few megahertz into the can.

As the wisened will know, toilet epiphanies can be as relieving as the expellant that bears them. Take the other day for instance, when my porcelain thought factory gave me the will and the way to get a little of that extra something from my diet. And by diet, I mean PC.

You see, I've been playing F.E.A.R. a bit. All right, I've been playing it a lot. As a fan of Resident Evil, Silent Hill and that Dangerous Dave 2 game John Carmack made before Wolfenstein 3D, horror makes parts of me tingle like sherbet. When coupled with a strong story, it takes more than a few packets of Wizz Fizz to pull me away to do something productive like ironing or eating.

My gripe was that I couldn't enjoy the game with everything on max. For the most part I could, but I'd always have to compromise somewhere.

Thing is, 'compromise' isn't in the *Atomic* dictionary. Seriously, I scratched it out with a 2B years ago. It's like when you offer to overclock your friend's PC and he says 'Don't compromise my PC'. What he really means is 'Don't my PC,' which doesn't make much sense at all but we'll pretend it means 'Overclock my PC you big man you'.

I should let you know that I was already running at 245MHz, making my Winchester Athlon 64 3000+ 400MHz faster than stock. My goal however was to hit 600MHz. I wanted men to tremble before my finely-tuned hardware. I wanted baby Jesus to cry. In short I wanted, nay demanded, my 3000+ to be a 3800+.

Thing is, 'compromise' isn't in the *Atomic* dictionary. Seriously, I scratched it out with a 2B years ago.

And by gum, I'd get there.

Daring as I was, I'd tried it all before – that's why I had 245MHz to start with. The difference now was that I had a new mobo: a DFI LAN Party SLI-DR that the store guy told me would bring all my wildest dreams to fruition. Either that or he was telling me *he* could bring all my wildest dreams to fruition. Needless to say I shop online now.

So, here I was again, this time with a smoking board, a gig of expensive 'enthusiast' RAM and a bottle of Jacob's Creek 2004 Merlot. The plan was

to make my CPU see God. And God it saw – if by God you mean the blinding fuzz of 1.5v.

My epiphany was broken down into two revelations – voltage and timings. These were two settings I'd always been afraid to fiddle with, but for some reason was now confident I had nailed. So, scared as a monkey being chased by a giant banana in a nightmare so bizarre only a monkey could dream it, I upped the core to 1.45v. My FSB hit 250MHz easy.

My PC wouldn't have 255MHz at these settings so up went the voltage, along with looser memory timings and a drop in the HTT multiplier. To my amazement, the sucker hit 260MHz. My heart soared like a fart in a bath. Seven tiny megahertz to go. Just seven.

With core set to 1.5v, the FSB settled on 265MHz. My dream was almost upon me.

Almost. I had of course forgotten to stress test.

By far the best test is SuperPi. If SuperPi can't complete a full one million set then it's just not stable. Hence, I ran SuperPi. And I ran it again. I only stopped running it when the crashing ceased at 250MHz. For all my work, labour and wine-drinking, I'd pushed 10MHz, or 50MHz effective, from my system. Maybe there's no such thing as toilet epiphanies. Just crap ideas.

SCENE

UNREALISTIC EXPECTATIONS.

See! *Doom 3* running on a PSP!
Do you believe me now?

Running? I have an
unplugged 286 in my basement
that runs faster than that.

Okay, okay! Let me just tweak
the graphics settings...



...and cry myself to
sleep tonight.

If it's any consolation,
that's the most realistic smudge
I've ever seen.

by Logan Booker

PowerColor®



Enter a World of Visual Velocity

For the ultimate in performance gaming, the Radeon® X1K Series combine a radically new ultra-threaded core 3D architecture and Shader Model 3.0, unleashing the most mind-blowing gaming effects. With ATI's revolutionary Avivo™ video and display technology to drive performance to new heights with incredible speed and intense 3D graphics. The Radeon® X1K Series are CrossFire™ Ready to deliver multi-GPU gaming performance.



PowerColor X1800 XT GameFX Board Series



- 625MHz/1.5GHz
- 256-bit Memory Bandwidth
- Shader Model 3.0 support
- Micro® DirectX® 9.0c
- OpenGL® support
- CrossFire™ Ready
- Windows® Vista Ready



PowerColor X1600 XT GameFX Board Series



- 600MHz/1.4GHz
- 128-bit Memory Bandwidth
- Shader Model 3.0 support
- Micro® DirectX® 9.0c
- OpenGL® support
- CrossFire™ Ready
- Windows® Vista Ready



PowerColor X1300 PRO GameFX Board Series



- 600MHz/800MHz
- 128/64-bit Memory Bandwidth
- Shader Model 3.0 support
- Micro® DirectX® 9.0c
- OpenGL® support
- CrossFire™ Ready
- Windows® Vista Ready



Australia IT

Tel: 1300 668 715 (03) 9560 3188
http://www.australiat.com.au

www.powercolor.com



PRO SERIES XTREME MEMORY

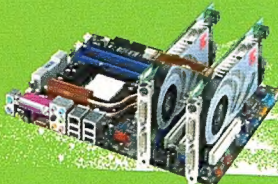


The new XMS-3500LL PRO from Corsair, is the industry's first high-density memory that delivers blazing performance at CL2-1T low latency and is specifically optimised for the ASUS A8N32-SLI DELUXE motherboard. XMS-3500LL PRO is uniquely designed to maximise and realise the potential of motherboards featuring dual PCI Express 2x16 slots and performs at nearly 438MHz. Featuring an individual module capacity of 1GB at CL2-1T, the XMS-3500LL PRO is optimised to unleash more AMD based system performance than the competition.



XMS1024-3500LL PRO

TWINX2048-3500LL PRO



www.altech.com.au

Sydney
Rydalmere Business Park
Unit R, 10-16 South St
Rydalmere, NSW 2116
Ph 02 8831 9999
Fax 02 8831 9988
sales-syd@altech.com.au

Melbourne
Building 3
13-15 Brough St
Springvale, VIC 3171
Ph 03 9558 5090
Fax 03 9558 5091
sales-mel@altech.com.au

Brisbane
64 Hope St
South Brisbane
QLD 4101
Ph 07 3017 2000
Fax 07 3017 2020
sales-bne@altech.com.au

Premium Resellers >
Perth
Unit 2
8 Carbon Crt
Osborne Park, WA 6017
Ph 08 9245 7383
sales-wa@altech.com.au

NSW Aus PC Market
Techbuy Pty Ltd (02) 9746 0288
(02) 9648 1818
VIC CPL P/L
Scorpion Technology (03) 9548 7088
1300 726 770
QLD Game Dude Pty Ltd (07) 3387 1500
SA Getright International (08) 8362 0622
WA Netplus Micro-Computers (08) 92427288
Nintek (08) 63635025

www.auspcmarket.com.au
www.techbuy.com.au
www.cpl.net.au
www.scorpiontech.com.au
www.gamedude.com.au
www.getright.com.au
www.netplus.com.au
www.nintek.com.au

Contact us for details on how to become a Corsair premium reseller in your state.